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# Journal of the AMERICAN MEDICAL WOMEN'S ASSOCIATION

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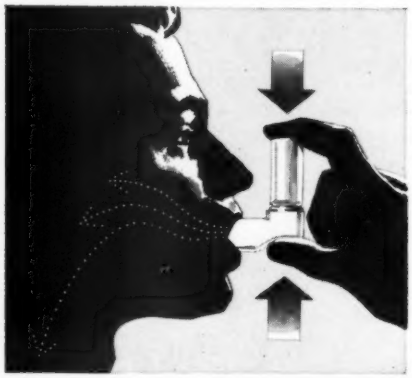

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1. Andrews, M. C.; Andrews, W. C., and Strauss, A. F.: Effects of Progestin-Induced Pseudopregnancy on Endometriosis: Clinical and Microscopic Studies, Am. J. Obst. & Gynec. 78:776 (Oct.) 1959.
2. Kistner, R. W.: Endometriosis and Infertility, Clin. Obst. & Gynec. 2:877 (Sept.) 1959.

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Volume 16 February, 1961 Number 2


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**erythropoietin levels — new criteria in diagnosis of anemia** Since erythropoietin is so rapidly used up in the process of erythropoiesis, increased erythropoietin blood levels can be demonstrated only in severe anemia or for a short time after the start of accelerated production.[9] Thereafter, the effect of the higher levels appears only as an increased erythroid marrow activity.[10] Since the hemopoietic marrow is capable of producing more red cells than normally required, it is postulated that many anemias may be due to inadequate erythropoietin levels—a result of subnormal production or excessive excretion.

**how does erythropoietin affect iron metabolism?** It is now well established that absorption and utilization of iron is dependent principally upon the degree of bone marrow erythropoiesis.[11,12] The rate of erythropoieses is, in turn, dependent upon erythropoietin levels. Thus, the demand for iron created by accelerated erythropoiesis is satisfied either by increased gastrointestinal absorption of iron or by mobilization of storage iron, or both. Failure to consider inadequate erythropoietin levels would seemingly account for the frequently disappointing results so often seen with the administration of iron alone in the treatment of anemia.

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(1) Gordon, A. S.: Pharmacol. Rev. 39:1, 1959. (2) Erslev, A. J.: J. Lab. & Clin. Med. 50:543, 1957. (3) Rosse, W. F., and Gurney, C. W.: J. Lab. & Clin. Med. 53:446, 1959. (4) Gurney, C. W.; Goldwasser, E., and Pan, C.: J. Lab. & Clin. Med. 50:534, 1957. (5) Rambach, W. A.; Alt, H. F., and Cooper, J. A. D.: Blood 12:1101, 1957. (6) Gordon, A. S., et al.: Proc. Soc. Exp. Biol. & Med. 92:598, 1956. (7) Erslev, A. J.: Blood 10:954, 1955. (8) Goldwasser, E.; Jacobson, L. O.; Fried, W., and Plzak, L. F.: Blood 13:55, 1958. (9) Stohlman, F., Jr., and Brecher, G.: Proc. Soc. Exp. Biol. & Med. 100:40, 1959. (10) Kraus, L. M., and Kraus, A. P.: Fed. Proc. 18:1051, 1959. (11) Bothwell, T. H.; Pirzio-Biroli, G., and Finch, C. A.: J. Lab. & Clin. Med. 51:24, 1958. (12) Beutler, E., and Buttenwieser, E.: J. Lab. & Clin. Med. 55:274, 1960. (13) Goldwasser, E.; Jacobson, L. O.; Fried, W., and Plzak, L.: Science 125:1085, 1957. (14) Murdock, H. R., Jr., and Klotz, L. J.: J. Am. Pharm. A. (Scient. Ed.) 48:143, 1959.

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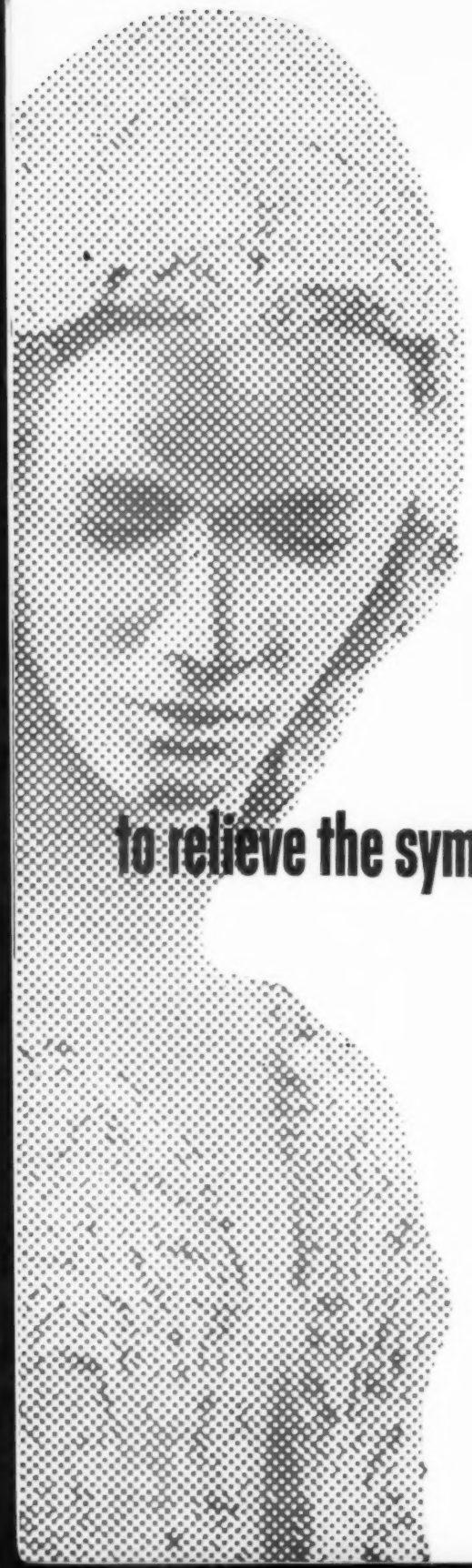

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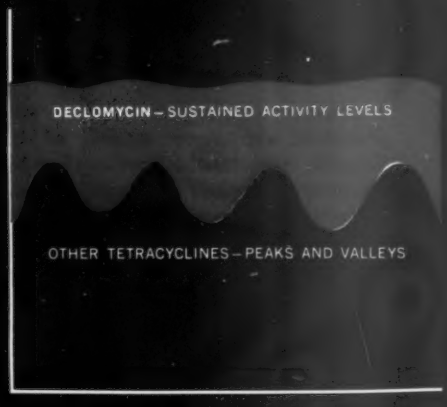


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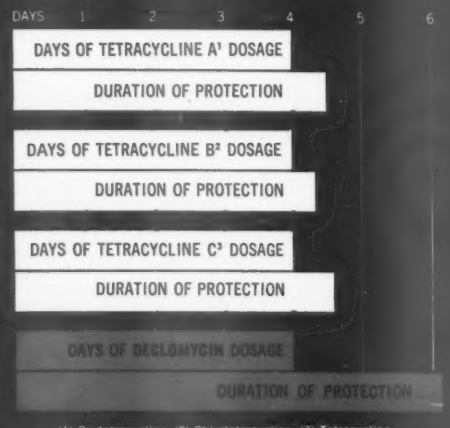
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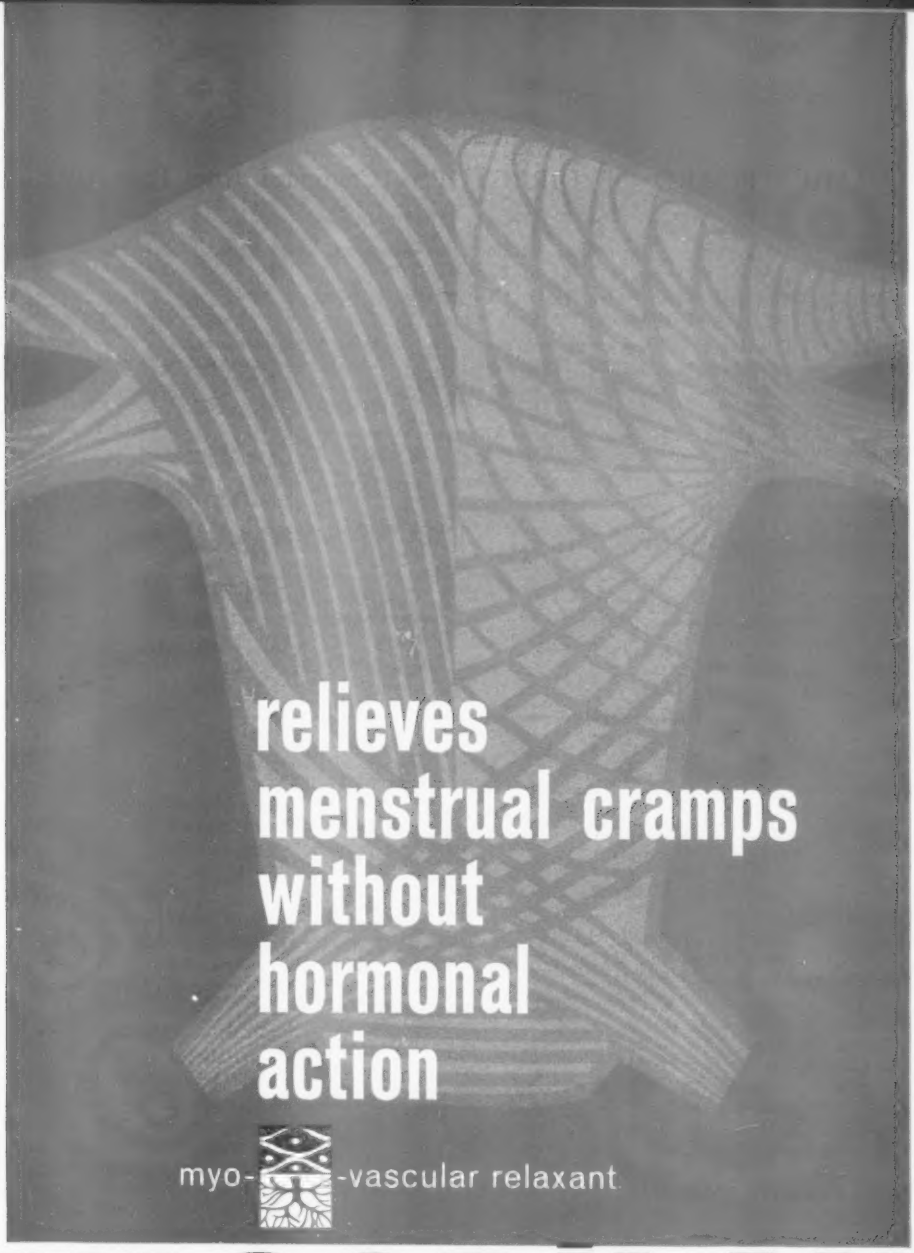


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*Voulgaris, D. M.: Obst. & Gynec. *15*:220-222 (Feb.) 1960.

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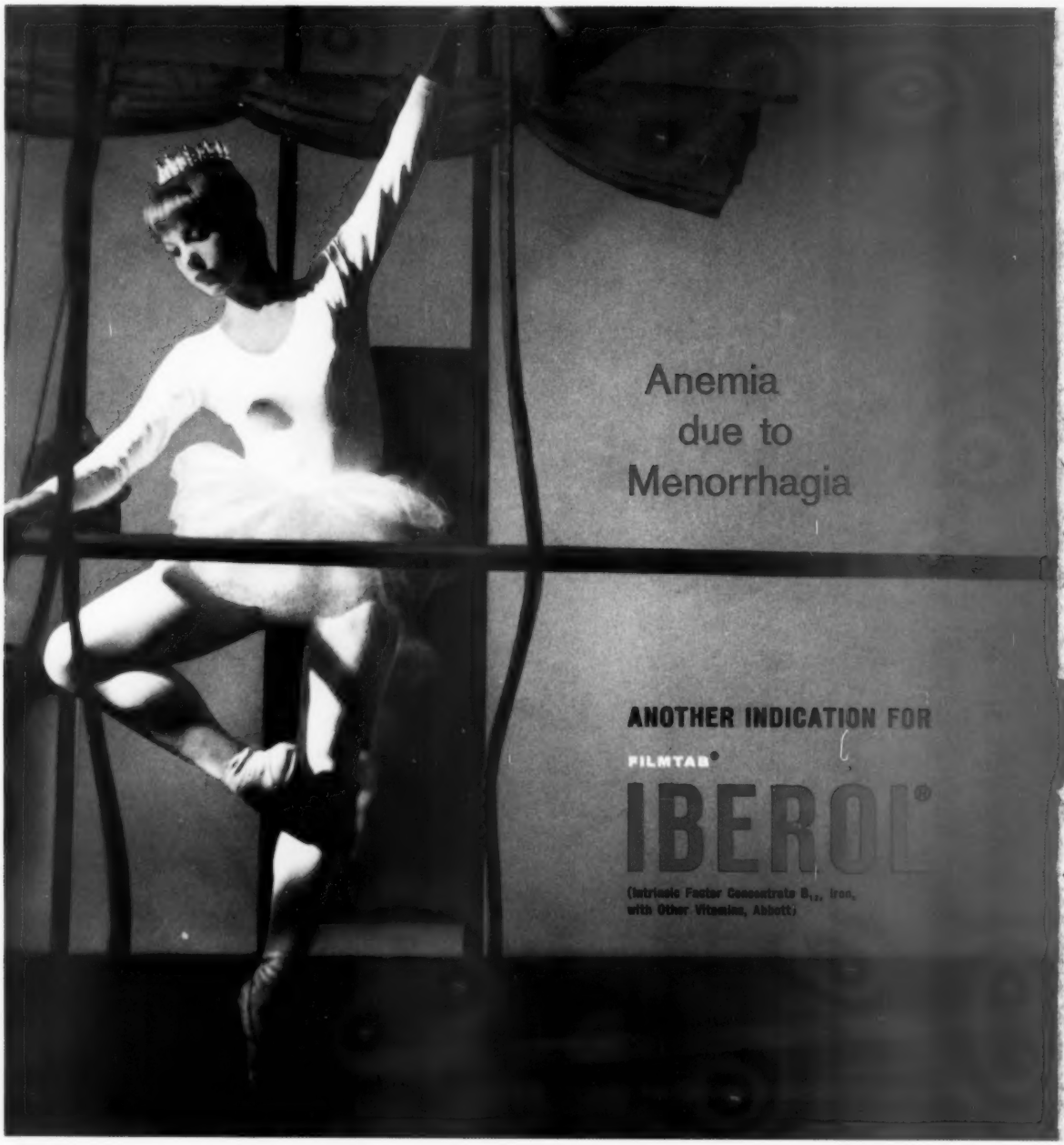


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| (Elemental Iron—210 mg.) | |

PLUS THE ESSENTIAL B-COMPLEX

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| Liver Fraction 2, N.F. | 200 mg. |
| Thiamine Mononitrate | 6 mg. |
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| Ascorbic Acid | 150 mg. |

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1. Frech, H. C., and Lanier, L. R., Jr.: Am. J. Obst. & Gynec. 74:1146, 1957. 2. Way, W. G., et al.: Virginia M. Month. 85:291, 1958. 3. Hellman, L. D.: To be published.

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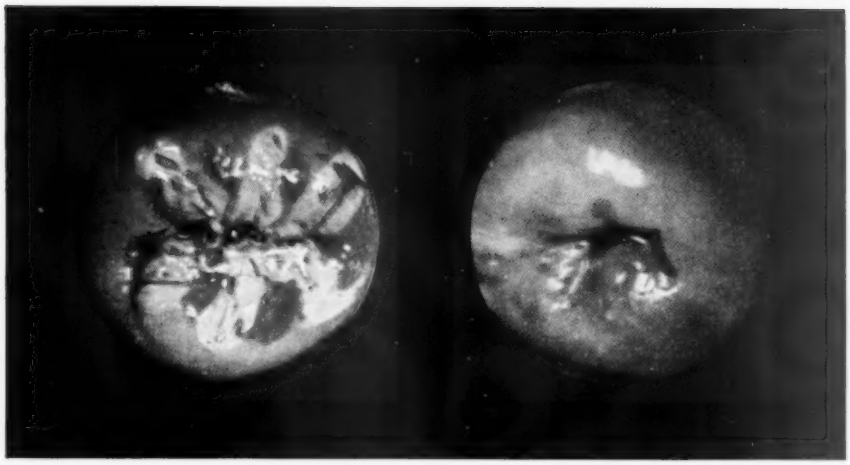

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1. Cornely, D. A., and Ritter, J. A.: N-acetyl-p-aminophenol (Tylenol Elixir) as a Pediatric Antipyretic-Analgesic, J.A.M.A. *160*-1219 (Apr. 7) 1956

2. Mintz, A. A.: Management of the Febrile Child, J. Ky. Acad. Gen. Pract. *5*:26 (Jan.) 1959.

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*(Continued on Page 124)*

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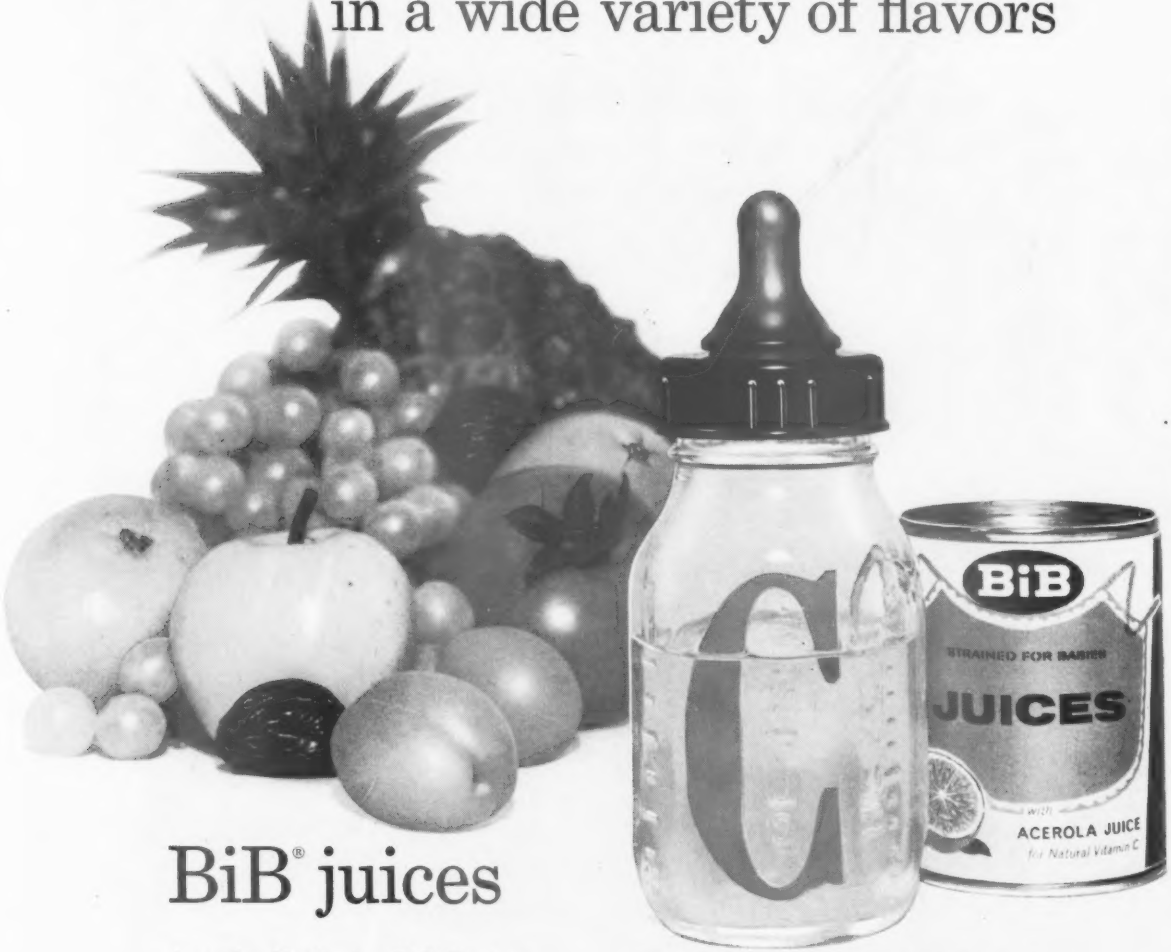


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References: (1) Asenjo, C. F., and Freire de Guzman, A. R.: Science *103*:219 (Feb. 22) 1946. (2) Clein, N. W.: J. Pediat. *43*:140-145 (Feb.) 1956.

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# in any emetic situation

in morning sickness | in digitalis intoxication

in postoperative nausea | in diabetic acidosis

in psychogenic vomiting | in motion sickness

in gastrointestinal disturbances | in hepatitis

in genitourinary infections | in labyrinthitis

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in gastroenteritis | in enterocolitis | in migraine

in neoplasms | in biliary colic | in cholecystitis

and even in children and in elderly patients:

# Tigan

## NEW 250 mg CAPSULES

# is safe and sound

Against nausea there's nothing more effective or, for that matter, quite so safe as Tigan. Tigan has *one* demonstrable pharmacologic property: it blocks emetic impulses, primarily by direct action at the chemoreceptor trigger zone (CTZ) of the medulla. Tigan thus *stops* active vomiting as effectively as it prevents nausea and emesis. There are no special precautions, no known contraindications for Tigan. A single chemical compound, Tigan is not a converted antihistamine, tranquilizer or sedative—and may be used even where older antiemetics are contraindicated.

USUAL DOSAGE

ADULTS—*Capsules:* The usual dosage is 100 mg to 250 mg, three or four times daily. In nausea and vomiting of pregnancy, one 250-mg capsule at bedtime and one immediately upon awakening. In severe cases this dose may be repeated up to a total of three or four capsules daily.

*Intramuscular Injection:* 200 mg (2 cc), one to four times daily.

*Suppositories:* 200 mg (one suppository), three or four times daily.

CHILDREN—*Capsules:* For children 30 to 90 pounds, one 100-mg capsule, three or four times daily.

*Intramuscular Injection:* Under 30 pounds, 50 mg (½ cc); 30 to 60 pounds, 100 mg (1 cc); 60 to 90 pounds, 150 mg (1½ cc)—one to four times daily.

*Suppositories:* Under 30 pounds, 100 mg (½ suppository); 30 to 90 pounds, 100 mg to 200 mg (½ to 1 suppository)—three to four times daily.

NOTE: There are no known contraindications or special precautions to be taken with Tigan therapy. Because Tigan has no sedative or tranquilizer properties, it is *not* necessary for patients to refrain from operating an automobile or other mechanical equipment while on Tigan medication.

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| Ferrous fumarate (equivalent to 50 mg. elemental iron) | 150 mg. |
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Dosage: 1 or 2 SEQUELS daily. Supplied: Bottle of 30.

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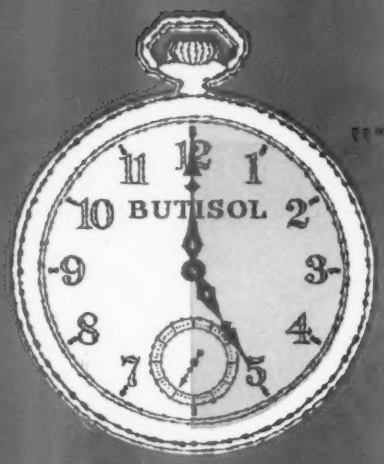


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for smoother management of smooth muscle spasm

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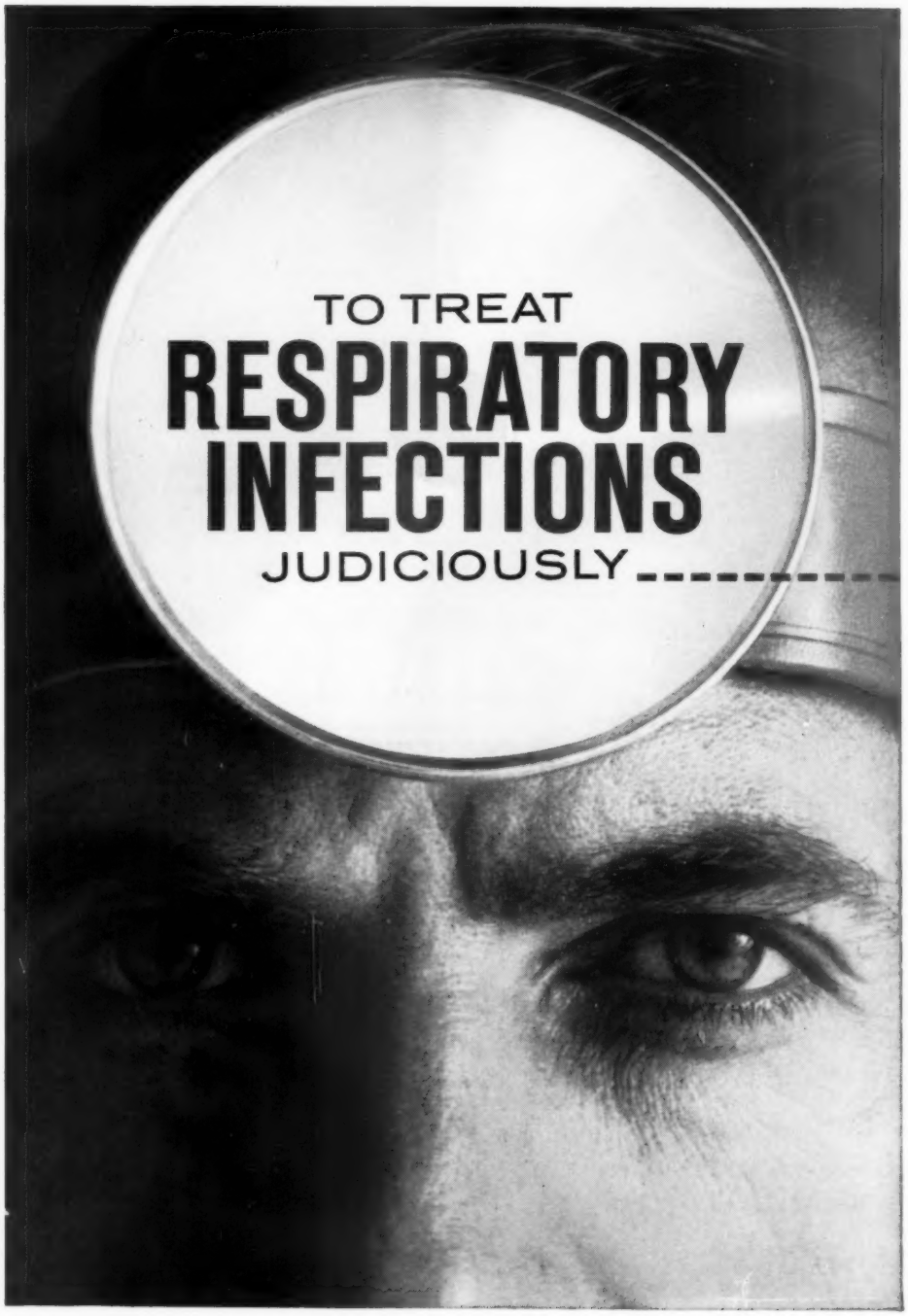
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(Continued from Page 116)

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# Schistosomiasis Mansoni

Sophie C. Trent, M.D.

SEVERAL CASES OF Schistosomiasis mansoni have recently been reported in tourists returning from vacations spent in the Caribbean. It is, therefore, pertinent to alert physicians and prospective travelers to this area that there are several areas endemic for this disease in the Caribbean: Puerto Rico, Vieques, St. Kitts, St. Lucia, St. Martin, Mevis, Montserrat, Martinique, Guadeloupe, Dutch Guiana, Santo Domingo, and Antigua. Venezuela and Brazil also have known endemic areas.

## PARASITOLOGY

Schistosomiasis mansoni is a chronic parasitic disease that primarily affects the liver and lower intestinal tract. It is caused by infestation with the trematode *S. mansoni*, which belongs to the family of flukes.

The adult male schistosome measures 6.4 to 9.9 mm. in length. It has a flat body that is folded ventrad with the caudal extremity to form a gynecophoric canal in which the female worm is enclosed during copulation. The female worm is filariform in shape and is 7.2 to 14 mm. in length. Both male and female adults have ventral and oral suckers, which are used for attachment to vascular walls and for feeding, respectively.

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The schistosomes live within the human liver until maturity at which time they migrate to the branches of the mesenteric veins, especially to those of the inferior mesentery where they mate and oviposition occurs.

The ova of *S. mansoni* are nonoperculated, oval in shape, golden in color, and refractile. They have a lateral spine that distinguishes them from the other schistosomes (*S. japonica, S. haematobium*). The ova measure 114 to 175 $\mu$ in length and 45 to 68 $\mu$ in breadth. One adult female of *S. mansoni* may lay as many as 300 ova per day.[1] The ova are deposited directly into the venules of the colon and rectum and rarely into the bladder. They are also carried to the liver and other viscera via the blood stream. The ova, which are deposited in the superficial layers of the intestinal mucosa, may break out of the vessel to reach the intestinal lumen and be carried out with the feces.

Each ovum contains an ovoid ciliated embryo called the miracidium. This embryonated form takes approximately nine days to mature and is viable for about two weeks

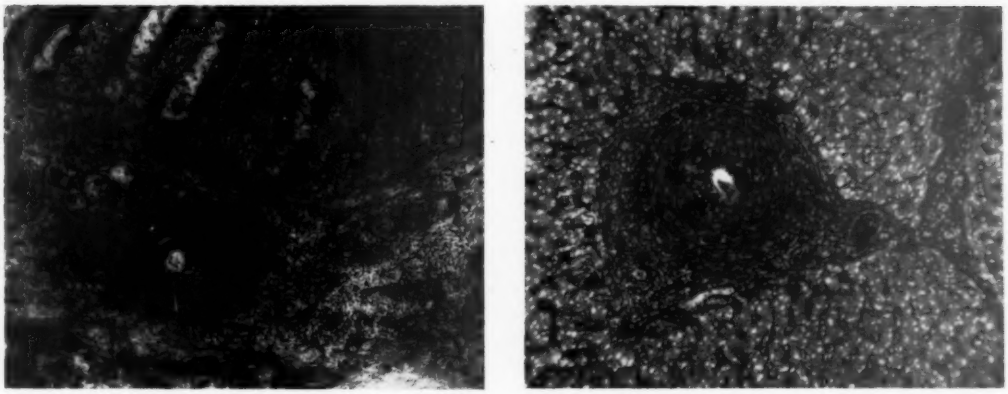

Fig. 1. *(Left) S. mansoni* ova in submucosa of colon. *(Right)* Pseudotubercle formation around *S. mansoni* ovum in the liver.

after reaching maturity.[2] If the ovum contained in the feces reaches fresh water, the miracidium within it is released. In order to survive it must find the appropriate host: a fresh water snail belonging to the genus *Planorbis*, *Physopsis*, or *Bulimus*, which usually frequents fresh water containing aquatic vegetation. Upon finding the snail, the miracidium penetrates its foot by means of a lytic substance that it excretes. Within the snail, the miracidium goes through several developmental "sporocyst" stages, which require a period of five to seven weeks. Ultimately, leaflike-forked-tailed "cercariae" are produced in which form they are infective for man. It has been estimated that one miracidium of *S. mansoni* will give rise to 100,000 to 250,000 cercariae.

The cercariae are free swimming forms whose life duration after emergence from the snail is about 24 to 48 hours. They swim about in the fresh water into which they have emerged from the snail until they find their human host. They penetrate the unbroken skin by means of a lytic substance that they secrete and shed their tails upon penetration. They then enter the capillaries and gain access to the venous circulation and to the right side of the heart, the lungs, and then out to the systemic circulation to reach the liver, where they grow until they reach maturity.

## PATHOLOGY

The pathologic lesions caused by *S. mansoni* are due primarily to the pseudotubercle and foreign body reaction elicited by the presence of the ova in the body tissues.

Once the ova have been deposited within the vascular lumen, they adhere to the endothelial lining and stimulate an endothelial proliferation. In time these endothelial cells, radially arranged, completely surround the ovum and exclude it from the vascular lumen. If the ovum has been deposited in the superficial layers of the intestinal mucosa it may ulcerate out and find its way into the intestinal lumen. If deposited deeper within the mucosa or submucosa it gives rise to pseudotubercle formation, with foreign body giant cells, mononuclear, and eosinophilic infiltration (Fig. 1, *Left*). Fibrosis continues to increase and ultimately the ovum is embedded in a fibrotic scar. Eventual absorption of the ovum may occur, leaving behind only the fibrotic scar to mark the place of previous ovum deposition.

*S. mansoni* ova are regularly carried to the liver where they give rise to the same type of pesudotubercle formation (Fig. 1, *Right*). In cases where there has been heavy deposition of ova in the liver, the normal liver architecture may be greately distorted and at times destroyed by the presence of numerous pseudotubercles and fibrotic scars.[3] In endemic areas, where repeated and heavy infestation is common, patients suffering with fibrosis of the liver (Fig. 2) with esophageal varices and engorged hemorrhoidal vessels are not uncommon. Enlarged spleens due to an increase in connective tissue with the spleen are also seen. The presence of pigment granules in the liver, morphologically identical with ma-

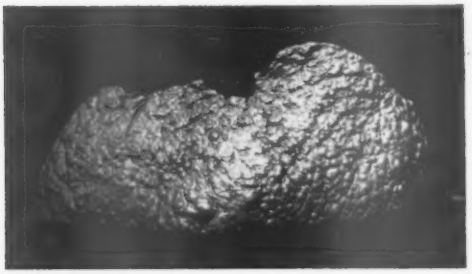

Fig. 2. Fibrotic liver due to *S. mansoni*.

larial pigment, is believed to be the residue of metabolized red blood cells ingested by the adult worms.

The presence of live adult *S. mansoni* worms rarely causes any pathological change. However, the presence of dead adults within the lumen of a vessel often results in a nodular proliferation of the vascular intima leading to whole or partial occlusion of the vessel with the dead worm enclosed within it.

However, if adult schistosomes should reach the pulmonary arteries through the inferior hemorrhoidal anastamoses, as they sometimes do, their presence will give rise to a severe arteritis. This is frequently accompanied by aneurysmal dilatation of the vessel wall. Perivascular infiltration with polymorphonuclear cells, eosinophils, and focal areas of pneumonitis surrounding the vessel occur. The presence of ova within the lung parenchyma gives rise to pseudotubercle formation with foreign body giant cell infiltration as elsewhere in the body (Fig. 3, *Left*). Extensive scarring and fibrosis of the lung are seen with heavy ova deposition.

## CLINICAL SYMPTOMS

The initial symptoms of schistosomiasis occur at the time infection is being acquired, *i.e.*, when cercariae are penetrating the skin. Itching of the skin (similar to the swimmer's itch found in the United States and Canada) is followed by an erythematous maculopapular rash or petechial hemorrhages at the site of cercarial invasion. These symptoms at times are so mild that they go unnoticed by the individual.

While the cercariae are circulating throughout the body in the blood stream, toxic and allergic symptoms may occur. These consist of fever, headache, urticaria, and pulmonary symptoms similar to bronchial asthma, and are accompanied by leucocytosis and eosinophilia. Transitory pulmonary infiltrations may be seen on roentgenologic examination of the chest.

When deposition of ova in the colonic mucosa begins, ulceration of the ova into the intestinal lumen occurs, frequently giving rise to abdominal cramps and bloody mucoid diarrhea. This may be accompanied by headache, malaise, and anorexia.

During the chronic stage of the disease, pseudotubercle formation and fibrosis has occurred about the ova; therefore, they do not gain access to the intestinal lumen and are infrequently found in the stools. However, sessile and pedunculated polyps containing nests of ova are often found in the rectum and lower colon. In the liver, the scarring around the ova leads to distortion of the normal architecture. In heavy infestations a fibrotic liver may develop with resulting ascites, spider hemangiomata, and the development of collateral circulation shown by the appearance of dilated abdominal veins and hemorrhoids. An enlarged spleen with Banti-like syndrome with anemia, leukopenia, thrombocytopenia, and low total serum protein with reversal of the albumin-globulin ratio may follow. The formation of esophageal varices causing attacks of hematemesis and bleeding from the dilated hemorrhoidal vessels are common in these severe cases. The presence of perioval fibrosis in the lungs in heavy infestations may result in fibrotic, poorly aerated lungs with dyspnea, cyanosis of lips and nails, clubbing of the fingers, dry hacking cough with changes in electrocardiograms typical of right heart strains, and eventual heart failure.

The presence of ova in the brain may give rise to epileptiform seizures of the Jacksonian type and other neurological disturbances, depending upon the location of the ova.

## DIAGNOSIS

There are several diagnostic methods available to the physician. The following list is in order of reliability and usefulness. 1. Rectal biopsy with removal of mucosa from the region of the Valves of Houston even if gross lesions are not visible; this technique[4, 5] not only demonstrates the presence of ova but direct examination under the high power of the microscope will indicate their viability (Fig. 3, *Right*). It is therefore useful not only

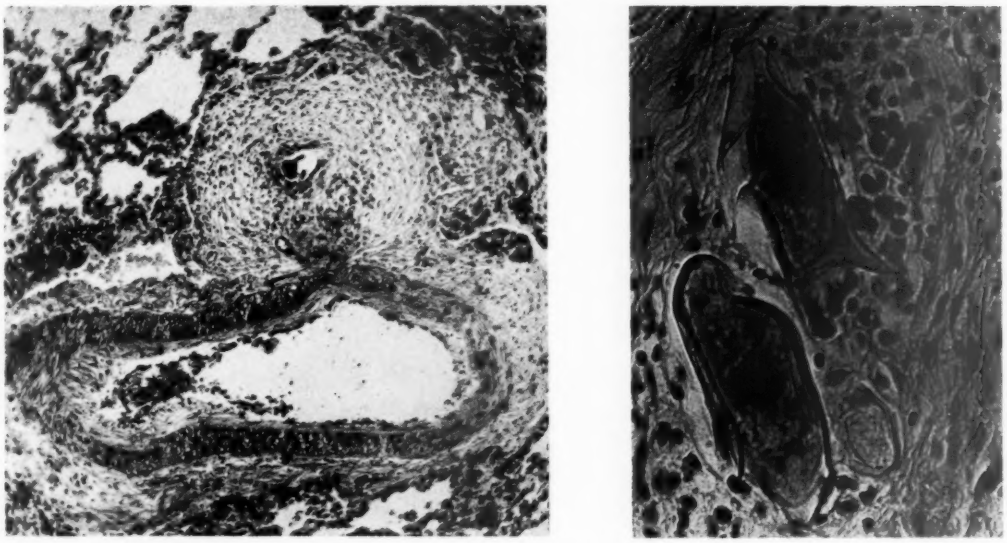

Fig. 3. *(Left)* Pseudotubercle formation around *S. mansoni* ovum in the lung. *(Right) S. mansoni* ova as seen in rectal biopsy tissue.

for diagnosis but for the evaluation of the effectiveness of therapy. 2. The circumoval precipitate test, described by Oliver Gonzalez[6] of Puerto Rico, if positive, indicates the presence of active schistosomal infection. 3. The intradermal skin test,[7] using antigen prepared from *S. mansoni* adults or cercariae, is positive in both active as well as treated cases. 4. Stool examination using (a) sedimentation concentration method,[8] (b) simplified zinc sulphate levitation method,[9] or (c) the improved acid ether method.[10]

## TREATMENT

The antimonials are still the medicament of choice in the therapy of schistosomiasis mansoni.

Christopherson[11] as far back as 1918 advocated the use of intravenous tartar emetic and Khalil and co-workers[12] in 1929 reported on the successful use of Fuadin (stibophen).

Since that time other drugs have been tried without too much success. Among those tried were the antibiotics[13, 14] and Miracil-D, which was developed during World War II. The latter gave only a 27 per cent cure rate in *S. mansoni*,[15] the former had no curative effect at all.

The standard course of therapy now in use consists of Fuadin (6.3 per cent solution) given in a dose of 5 cc. per day for a total dose of 100 cc. This has been reported as giving a 100 per cent cure rate for *S. mansoni* infections.[16] The intensive Fuadin schedules, which were recommended at one time (during which the period of therapy was contracted to a few days or the total dose was markedly increased), have been found to result in too many toxic symptoms to warrant general use.

Toxic effects of the antimonials consist of nausea and vomiting (especially during intravenous tartar emetic therapy), generalized joint and muscle aching, and headache. Thrombocytopenia following the use of Fuadin has recently been reported.[17] Bradycardia may also occur with the use of tartar emetic. Both of these symptoms necessitate the termination of antimonial therapy.

## PREVENTION

Since infection is acquired by exposure of skin or buccal mucosa to fresh water containing *S. mansoni* cercariae, prevention is simple and consists merely of avoiding contact with fresh water in known endemic areas. Swimming in fresh water pools, lakes, or streams, should be avoided. Water for drinking purposes should be boiled for sterilization since chlorine in the usual strength of 1:1 million (the strength generally employed for sterilization of drinking water), appears

to be ineffective in killing cercariae. Sand filtration and aluminum sulphate clarification also are not successful in removing cercariae.

Swimming in salt water is safe unless it is done near a river or stream outlet where heavy contamination may occur. An important rule to follow in endemic areas is to look upon all fresh water with suspicion.

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# Anemia in Pregnancy; a Ten Year Survey

Jean M. Scott, M.D.

THE INCIDENCE OF ANEMIA as a complication of pregnancy varies throughout the world. As the result of a survey carried out here, in Glasgow, in 1946 and 1947, it was found to be more common than had been suspected. Approximately 17.6 per cent of patients were anemic when first seen at the antenatal clinic (hemoglobin level less than 10 Gm. per 100 cc.) and 4 per cent were severely anemic (hemoglobin level less than 8 Gm. per 100 cc.). Their treatment presented a problem, mainly on account of numbers of cases. In a busy antenatal clinic dealing with over 5,000 patients a year it was impossible to assess each case individually. They were therefore divided into several groups depending on their initial hemoglobin reading. Those with values over 12 Gm. per 100 cc. were classified as "normal." No further therapy was prescribed and unless otherwise indicated their hemoglobin was not checked again till the thirty-sixth week of pregnancy. Approximately 50 per cent of the patients in the antenatal clinic were included in this group and few if any showed any significant deterioration (drop of more than 5 per cent Haldane or 0.75 Gm. per 100 cc. hemoglobin) as their pregnancy advanced.

In another 30 per cent of the patients, the initial hemoglobin reading was between 10 and 12 Gm. per 100 cc. A number of them showed a significant fall in hemoglobin level before term, 2.5 per cent actually becoming anemic. Without doubt, hemodilution aggravated this picture of increasing "anemia," yet, at the same time, it did not explain the more marked deterioration in their cases. Closer scrutiny of these "low normal" patients suggested the possibility of a latent iron deficiency and their subsequent response to iron seemed to confirm this. Therefore, these patients were routinely given oral iron and, provided they took it, no further hemoglobin check was carried out till the thirty-sixth week of pregnancy.

The remaining patients with hemoglobin values of less than 10 Gm. per 100 cc. were all classified as anemic. Their treatment was supervised at the blood clinic and will be discussed later.

In theory, the afore-mentioned grouping of patients should be carried out at the third month of pregnancy, but in actual fact many patients do not report to the clinic until gestation is well advanced. Hence a woman near term may be classified as "low normal" or potentially anemic, when her blood volume increase and fetal demands for iron (approximately 400 mg.) have already largely been met. It is admitted that such a patient probably does not require iron, but practice has shown that when dealing with large numbers of women, routine iron administration in all borderline cases is advisable.

For more than 10 years now, the above regime has been a routine at the antenatal clinic and in order to assess its effect, similar surveys were carried out again in 1957 and 1958. The results are shown in table I. It can be seen that though the incidence of anemia in patients as a whole had diminished slightly, the most striking change occurred in the number with severe anemia, which was reduced by 75 per cent. It is generally agreed that, where the balance of iron is precarious, there is a progressive drain on the maternal stores of iron with each successive pregnancy. It seems logical, therefore, to conclude that early recognition and treatment of anemia or even potential anemia in our patients had counteracted this vicious process and eventually reduced the incidence of severe anemia itself.

*Dr. Scott is Assistant Pathologist at the Research Department, Glasgow Royal Maternity Hospital, Scotland.*

TABLE I
*Percentage Incidence of Anemia*

| | % Severe | % Moderate | % Total |
|---|---|---|---|
| 1946 | 4.0 | 17 | 21 |
| 1947 | 4.8 | 17 | 22 |
| 1957 | 1.0 | 9.2 | 10.2 |
| 1958 | 1.0 | 13.6 | 14.6 |

Many investigators have tried to relate the incidence of anemia in pregnancy to age and parity of the patients and the majority have found neither of these factors alone to be statistically significant.[1-4] It seemed to us that rapidly succeeding pregnancies were more important than the actual parity itself and results of our investigations are shown in figure 1. In the series of 131 pregnant, anemic, multiparous women reviewed, 88 were otherwise normal and no other cause for the anemia, apart from repeated pregnancies, could be found. These 88 women were divided into groups according to their parity and the average delivery interval (A.D.I.) between babies was calculated for each group. It can be seen that if anemia appeared in a second pregnancy the A.D.I. was only 1.06 years (S.D.=.004). If its onset was delayed till the third pregnancy the A.D.I. was longer, namely 1.88 years (S.D.=.21), and in women anemic with their fourth child the A.D.I. of 2.7 years (S.D.=1.33) was near the normal average in Glasgow for nonanemic women, namely 3.1 years. These findings would suggest that even with planned pregnancies, with two to three years between children there is a marked tendency for the mother to become anemic with her third or fourth baby.

Other complications were present in the remaining 43 anemic multiparous women in the series under review. For comparison, 52 unselected anemic primiparae were similarly investigated and the results are shown in table II. In both groups cardiac disease was a common single factor, but in the multiparae a history of recent hemorrhage seemed to be important as a factor. In over 80 per cent of the primiparae no apparent cause for the anemia could be found, but it is interesting to note that 9 of these were unmarried mothers, an incidence of 17.3 per cent illegitimacy, whereas the average figure for hospital primiparae in Glasgow is 8.4 per cent. From these findings one might conclude that there is still a degree of anemia or potential anemia among the young female population. It probably passes unrecognized and generally only comes to light in a first pregnancy. This may be related to social conditions.

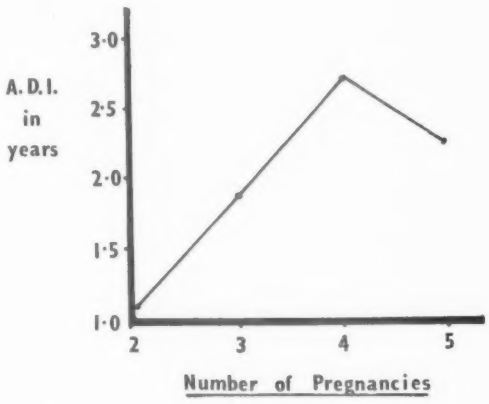


Fig. 1. Average delivery interval (A.D.I.) in 88 anemic multiparae with no other complications.

## DIAGNOSIS

In the absence of routine hemoglobin estimations this anemia may be easily missed. Clinical assessment is difficult, partly due to the fact that few of the patients ever complain. Fully two thirds of the women with moderate anemia and one third of those with severe anemia stated they felt well. Only after further questioning would they admit to slight breathlessness, weakness, or tiredness,

TABLE II
*Percentage Incidence of Complications Other Than Anemia*

| | No. | Cardiac Disease | Multiple Pregnancy | Recent Hemorrhages | Rheumatoid Arthritis | Other Diseases | A.D.I. <2 yrs. | Otherwise Normal |
|---|---|---|---|---|---|---|---|---|
| Primiparae | 52 | 9.6 | 1.9 | 0 | 1.9 | 5.8 | — | 80.8 |
| Multiparae | 131 | 6.9 | 3.0 | 8.4 | 0.8 | 3.8 | 67.2 | 9.9 |

symptoms that they generally attributed to the pregnancy. Moreover, pallor in pregnancy is misleading and trophic changes are uncommon. Edema was present in 18 per cent of the patients with severe anemia. Once anemia is suspected it is essential to determine its type. Generally, hemoglobin, hematocrit, red cell count, and blood film examination are sufficient for this purpose, but one must always be on the lookout for the megaloblastic anemia of pregnancy. This is not usually a problem in the antenatal clinic where 99 per cent of the anemias are of iron deficiency type, but occasionally an early or transitional megaloblastic anemia does crop up. More commonly it is found as an emergency near term or in the puerperium. Unlike Addisonian (pernicious) anemia, megaloblasts are often seen in the peripheral blood and an ordinary film or a buffy coat examination may give the diagnosis. For this reason all patients with red cell counts significantly below normal (3.5 million per cubic millimeter) have the buffy coat of the blood screened and, if necessary, marrow examinations are made.

Morphologically, the blood picture in simple iron deficiency anemia is similar to that seen in nonpregnant patients, but due to the hemodilution of pregnancy there is less anisocytosis and ring staining present at each corresponding hemoglobin level. Unless this point is realized, the relative absence of these features may lead one to suspect some depression of erythropoietic activity. In the more severe forms of the anemia, where the marrow is hypercellular but still normoblastic, white cells in the peripheral blood may show a slight shift to the left and occasionally grey polychromasic cells and late normoblasts are seen, but the reticulocyte count is not raised.

## TREATMENT

Ideally, iron therapy should be commenced early in pregnancy and the oral route is the method of choice at this stage. In a controlled series[4] of patients taking ferrous sulphate, 80 per cent of them showed a satisfactory response. Failures were due mainly to interrupted therapy, resulting either from forgetfulness or because the iron caused sickness. In more recent surveys salts of the organic acids such as the gluconate, succinate, or fumarate of iron have been used. No difference has been found in the response to treatment with these products but failures decreased by a half due to improved gastric tolerance.

Occasionally infections or toxemia depress erythropoiesis and reduce the response to treatment. Rarely one meets a woman with an apparently simple severe iron deficiency anemia that fails to respond to oral iron, though the serum iron is low and the marrow normoblastic. This patient will respond well to parenteral iron. In a series of over 100 patients with controlled anemia, 5 of them have shown this "malabsorption syndrome."

In assessing the response to oral iron during pregnancy one must remember that the apparent increase in hemoglobin is much slower, partly because of the fetal demands and also because of the progressive increase in blood volume. In 20 per cent of cases there may be no obvious improvement in the hemoglobin level even after one month's therapy, though a glance at the blood film shows evidence of active erythropoiesis. Prolonged therapy is therefore necessary to raise the hemoglobin to a satisfactory level.

Unfortunately, as already mentioned, a number of patients do not report early enough in pregnancy to allow for this, and the iron may have to be given parenterally. Intramuscular iron dextran complex seemed to be invaluable[5] in these cases but recent reports on experimental work on animals [6-9] suggest that it may have a carcinogenic effect and for this reason its use has been discontinued here.* Of necessity clinicians have had to revert to intravenously administered iron. With it, the response is better, but this advantage is largely outbalanced by a higher reaction rate[5] and a more difficult injection technique.

## COMPLICATIONS

In a number of cases where labor is imminent, blood transfusion has to be given if complications are to be avoided. Table III shows the major risks involving mother and baby. Severe anemia of itself did not appear to influence the duration of labor, the mode of delivery, or the incidence of post-partum hemorrhage, though when the latter did occur its effects were naturally more serious.

In the puerperium the influence of anemia was more obvious. Complications such as

*Since going to press, intramuscular iron has been used in short courses in specially selected and controlled cases. *Author's Note.*

TABLE III

*Percentage Incidence of Complications in Mother and Baby*

| | | Low Normal Controls (85) | Mild Anemias (83) | Severe Anemias (53) | Treated Severe Anemias (58) |
|---|---|---|---|---|---|
| Spontaneous Delivery | % | 89 | 84 | 79 | 77 |
| Delayed Labor | % | 22 | 19 | 7.5 | 20 |
| Caesarian Section | % | 6 | — | 2 | — |
| Miscarriage | % | — | — | 11 | — |
| Premature Delivery | % | — | 2 | 11 | — |
| 3rd Stage Blood Loss | | | | | |
| a) Moderate | % | 40 | 30 | 28 | 44 |
| b) Brisk | % | 5 | 6 | 11 | 16 |
| Normal Puerperium | % | 73 | 78 | 55 | 65 |
| Healthy Babies | % | 89 | 78 | 74 | 93 |
| Corrected Perinatal Mortality Rate | % | 0.5 | 1.5 | 10.6 | 0 |

white leg, pyelitis, bronchitis, and milder forms of intrauterine infection were more common and were noticeably reduced by antenatal treatment. Even in the treated group complications were still higher than in the normal controls, and it may be that when severe anemia has been present the tissues are less resistant to infection in the puerperium.

It should be stressed that few if any of these complications in the mother were really serious. On the other hand it is obvious that the well-being of the baby is at stake. In cases of untreated severe anemia, the miscarriage rate and the premature delivery rate were both 11 per cent. Yet each could be largely prevented with treatment (Table III). Moreover, since a higher proportion of premature babies die, one is not surprised to find a high neonatal death rate (9 per cent). Stillbirths, too, were more frequent in patients with untreated severe anemias. Indeed, if the perinatal mortality rate is corrected for such things as congenital abnormality incompatible with life, the following figures are obtained. In the control series of 85 patients with low normal hemoglobin levels the perinatal mortality was 0.5 per cent. In those with mild anemia (hemoglobin level of 9 to 10 Gm. per 100 cc.) it was 1.5 per cent (83 cases); while in cases with severe treated anemia (58 cases) no deaths were recorded but in the 53 untreated cases, 10.6 per cent of the babies died in the perinatal period.

These figures are drawn from the first year of our 10 year survey, when patients with severe anemia were naturally seen more frequently and some were admitted undiagnosed at term, having made only one visit to antenatal clinic. Follow-up methods on anemic outpatients at that time were considerably slower and today it would be impossible to collect such a series of pregnant women with untreated severe anemia. All would at least have received a transfusion of blood. If they

do nothing else, the figures stress the importance of therapy in the prevention of fetal loss. To be effective this should be commenced early in pregnancy. Only in this way will miscarriage or premature delivery be avoided.

Finally, one is sometimes asked to state what is considered to be a relatively safe hemoglobin level for a woman in labor. It is certainly most unwise to be dogmatic on this point yet some form of guidance is generally sought. The above results do suggest that where the anemia is mild, there is probably little if any risk to the mother. On the other hand the fetal loss is slightly raised, but whether this is significant or not is difficult to determine since so many other factors affecting the fetus are obviously involved. One has also to consider the remote, though possible, risk of blood transfusion itself and each case has to be assessed individually before embarking on any set course of therapy. Certainly in severe anemia the problem is easier and the indications for blood transfusion should be obvious.

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## Banks for Hearing Research

Five "banks" for temporal bones, to further research in loss of hearing, have been established in the last few months by the Deafness Research Foundation. The Temporal Bone Banks, unlike the Eye Banks, are for basic research. The Banks are located at Columbia and New York universities in New York City, Johns Hopkins University in Baltimore, the University of Chicago, and the University of Michigan, Ann Arbor.

# Treatment of Acute Leukemia of Childhood

Yolanda F. Torralba, M.D., and Margaret P. Sullivan, M.D.

THE AIM OF SPECIFIC antileukemic therapy is the suppression of the disease process, with restoration of normal hematopoiesis and the disappearance of leukemic infiltrates from all the tissues. Since 1948, three classes of agents capable of fulfilling this aim have been developed. They are corticotropin and corticosteroids, folic acid antagonists, and purine antagonists. These agents have induced temporary remissions of variable duration in a substantial number of children with leukemia. Most investigators use a sequential type of therapy, utilizing the different classes of antileukemic agents in turn so long as they are effective. Eventually, the leukemic process becomes resistant to each class of compounds. Cross resistance between classes does not exist, and a patient resistant to one group of drugs may respond to the others.

Response to antileukemic therapy is assessed by periodic evaluation of bone marrow, peripheral blood and physical findings, and of clinical symptoms. Criteria for evaluation of the response vary slightly among study groups; those of Acute Leukemia Chemotherapy Cooperative Study Group A have served as a model for other groups.[1] According to these criteria, the following conditions must be fulfilled to attain a complete remission: (1) bone marrow—reduction in number of blasts to less than 10 per cent and lymphocytes to less than 20 per cent; essentially normal appearing hematopoiesis; (2) peripheral blood—return to, and maintenance for more than one month of, a hemoglobin value greater than 11.0 Gm. per 100 cc. for children over 2 years of age and 10.0 Gm. per 100 cc. for children under 2 years of age; absolute granulocyte level in excess of 1,500 per cubic millimeter; platelet count greater than 100,000 per cubic millimeter, and the absence of leukemic cells; (3) physical findings—subsidence of all evidence of leukemic infiltration; (4) clinical symptoms—no symptoms ascribable to leukemia.

When the afore-mentioned criteria have not been met, despite significant improvement, the response is classified as a partial remission. Drug failure occurs when there is neither hematologic nor clinical improvement.

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## CORTICOTROPIN AND CORTICOSTEROIDS

The mechanism by which corticotropin and corticosteroids suppress the leukemic process is not fully understood. The lymphopenia and atrophy of lymphoid tissue which result from administration of these agents is probably a reflection of both cell destruction and decreased cell production.

The rapidity with which the leukemic process may be reversed by the administration of ACTH and corticosteroids makes it desirable to reserve these agents for the acutely ill child and for emergency situations. Substantially higher than usual dosage schedules are used at this institution, as shown in table I. Complete remissions may be expected in approximately one to two thirds of the children who have been treated; 8 to 10 per cent show no response. Improvement usually begins during the first week of therapy and becomes maximum within the next 2 to 3 weeks. Decremental doses are then given to "taper off," and the therapy is discontinued over a period of from 5 to 7 days. Because of the high dosage used, the hormones and hormone analogs are not continued in full dosage beyond 4 weeks. Continuation of therapy after achievement of remission apparently does not prolong the duration of remission but ac-

centuates the adverse effects of treatment. The duration of steroid-induced remissions has been reduced by reinstituting therapy when relapse occurs. Usually, such remissions are of poorer quality and of shorter duration than the previous steroid remission.

With the administration of corticotropin and corticosteroids at the suggested dose levels for from 3 to 5 weeks, various untoward reactions may be expected. If these effects become alarming, dosage should be reduced by 50 per cent. The masking of signs and symptoms of infection by these agents must be kept in mind constantly. Voracious appetite, obesity, and some degree of hirsutism are very common. Sodium and water retention, frequently with secondary hypertension, and negative potassium, calcium, and nitrogen balance are less frequent but more serious. Mental disturbances and convulsions are rare. In our experience, hyperglycemia has occurred only in those children with a family history of diabetes. Untoward mineralocorticoid effects may be minimized to some extent by the use of low-salt diets with supplementary potassium (potassium chloride, 1.0 Gm., orally, three times daily). The *delta*-1 derivatives of cortisone and hydrocortisone (prednisone and prednisolone, respectively) cause less severe disturbances in salt and water metabolism. Newer analogs of the *delta*-1 derivatives, which incorporate a fluorine atom at the C 9 position (triamcinolone and dexamethasone), are relatively free of mineralocorticoid activity. The relative effectiveness of the various corticosteroids and synthetic analogs in treating acute leukemia has not been established. None of these compounds is sufficiently superior to be given preference over the others.

### FOLIC ACID ANTAGONISTS

The folic acid antagonists are thought to exert their antileukemic effect by preventing the conversion of folic acid to folinic acid and by interfering with the utilization of folinic acid. Formate transfer, a step in the synthesis of purines and pyrimidines which requires folinic acid, is thereby blocked.

Amethopterin (Methotrexate) is the more widely used agent of this class because of its decreased toxicity relative to therapeutic effectiveness. Other infrequently used folic acid antagonists include aminopterin, dichloroamethopterin and 2, 4-diamino-5 (3′4′-dichlorophenyl)-6-methylpyrimidine. Conventional doses for amethopterin are shown in table I. Medication is given orally once a day. Three to eight weeks of therapy may be required to achieve maximal response. Maintenance therapy is usually continued thereafter at the same dosage. Complete remissions occur in 20 to 30 per cent of children who receive this therapy. The duration of these remissions is approximately 5 to 7 months.

An early and frequent sign of toxicity is the appearance of small, shallow, yellow ulcers on the buccal mucosa, lips, and/or pharyngeal pillars. The mouth must be inspected daily for such lesions, and the parents should be taught to do this when treatment is being given on an outpatient basis. If further medication is withheld the ulcerations heal within a day or two. Treatment can then be resumed. If oral signs of toxicity occur repeatedly, therapy must be either intermittent or at a reduced dosage. Oral ulcerations must not be ignored because continuation of therapy may result in ulceration throughout the gastrointestinal tract, with severe pain, vomiting, and bloody diarrhea. Other signs of toxicity include anorexia, bright red skin eruptions, thinning of the hair, and bone marrow damage. Toxic hypoplasia of the marrow is reversible if medication is promptly withdrawn. Marrow changes, typical of those seen in other folic acid deficiency states, also occur but do not require interruption of therapy unless anemia is present. The toxic, as well as the therapeutic, effects of folic acid antagonists given in the preceding 24 hours can be nullified by the intramuscular administration of citrovorum factor (Leucovorin).

### PURINE ANTAGONISTS

This class of agents achieves an antileukemic effect by interfering with the incorporation of purine, nucleosides, or nucleotides into nucleic acid, thereby blocking the *de novo* synthesis of purines and pyrimidines.

The most widely used representative of this class is 6-mercapto-purine (Purinethol) which is given by mouth at a dosage of 2.5 mg. per kilogram of body weight daily. Therapy must be continued for from 3 to 5 weeks to attain maximal improvement. Thereafter, daily maintenance therapy at the same dosage is strongly recommended because relapse may occur promptly if therapy is discontinued.

TABLE I

*Dosage Schedules for Commonly Used Antileukemia Agents*

| Agent | Route of Administration | Dosage |
|---|---|---|
| ACTH Gel | Intramuscular | 4 units per Kg. of body weight, daily |
| ACTH | Continuous intravenous infusion | 25-50 units in 24 hours |
| Hydrocortisone | Oral | 12.0 mg. per Kg. of body weight, daily, divided into 4 doses |
| Cortisone | Oral | 15.0 mg. per Kg. of body weight, daily, divided into 4 doses |
| Prednisone | Oral | 2.2 mg. per Kg. of body weight, daily, divided into 4 doses |
| Dexamethasone | Oral | 0.45 mg. per Kg. of body weight, daily, divided into 4 doses |
| Amethopterin (Methotrexate) | Oral | 1.25 mg., daily, for children under 18 months of age<br>2.5 mg., daily, for children aged 18 months to 10 years<br>5.0 mg., daily, for children over 10 years of age |
| | Intrathecal | 0.5 mg. per Kg. of body weight every 4-7 days (usually 2 - 3 doses) |
| 6-mercaptopurine (Purinethol) | Oral | 2.5 mg. per Kg. of body weight, daily |

Complete remissions have been reported in 30 to 50 per cent of children treated. About 15 to 30 per cent of the children fail to respond to this medication. Complete remissions average 3 to 4 months in duration. Other effective purine antagonists are 6-thioguanine, 6-chloropurine, and 6-methyl-mercaptopurine.

With the recommended dosage, signs of toxicity are usually rare. The most frequently noted side effect has been prompt and marked leukopenia, especially in children with high white blood cell counts at the onset of therapy. Precipitous falls in the white cell count may be associated with hyperuricemia and renal failure if satisfactory hydration, renal blood flow, and urine volume are not maintained. Omission of medication for several days during precipitous drops in white cell count is recommended. Leukopenia associated with a leukemic marrow is not an indication for discontinuation of therapy. Medication, however, should be withheld when bone marrow depression occurs. If drug administration is temporarily discontinued, the toxic hypoplasia is usually transitory. Other rare signs of 6-mercaptopurinee toxicity include anorexia, vague abdominal pains, oral and gastrointestinal ulcerations, thinning of the hair, drug fever, and megaloblastic changes in the bone marrow.

### INVESTIGATIVE THERAPY

Several large co-operative study groups sponsored by the Cancer Chemotherapy National Service Center are currently participating in programs designed to evaluate new antileukemic agents, to determine optimal dose schedules for standard drugs, to evaluate drug combinations, and to determine the effect of drug sequence on response to therapy.[2] The status of these studies is shown in table II. Leukemia, resistant to standard treatment, is used to evaluate new classes of agents; untreated leukemia is used in other types of studies.

Cyclophosphamide (Cytoxan) is one of several cyclic phosphamide esters of nitrogen mustard which was formulated following the demonstration of increased phosphamidase in malignant tissues.[5] Contrary to expectation, this agent (Cytoxan), which is inactive in vitro, seems to be activated in liver rather than in malignant tissue.[6] Definite antileukemic effect and lack of cross resistance with other

classes of antileukemic drugs have been demonstrated in experimental systems.[7, 8] As a part of a larger study being conducted by the Southwestern Cancer Chemotherapy Study Group, 9 patients with resistant leukemia have been treated with cyclophosphamide at this institution.[9] One child, who previously had responded well to the other three classes of agents, received intermittent cyclophosphamide therapy for a period of 9½ months. Combined therapy, using dexamethasone, resulted in a 3½ month remission. Relapse was treated with cyclophosphamide alone and the remission status was maintained for 6 months. In another child who was thought to be resistant to steroid therapy, combination dexamethasone and cyclophosphamide therapy resulted in a partial remission of 72 days duration; and in a third child, the administration of cyclophosphamide alone was credited with a partial remission of 30 days duration. The remaining children failed to achieve partial remission though some degree of hematologic or symptomatic improvement was noted.

Dosage schedules have not been well established. Currently, our patients are being given 5 mg. per kilogram of body weight, intravenously, daily, for 10 days. During this period, daily white blood cell counts are done, and treatment is withheld if the count is below 1,500. After a rest period of 3 to 4 days to permit white blood cell count stabilization, daily oral therapy is started at the same dose level. Blood counts must be made at least twice weekly during oral maintenance therapy and further adjustments in dosage are usually necessary to prevent bone marrow damage. Severe leukopenia is seen in almost all of these patients and requires most careful titration of the white blood cell count against drug dosage. Alopecia occurs very frequently during treatment but it is not permanent. Nausea, vomiting, and hemorrhagic cystitis are rare.

TABLE II

*Co-operative Group Investigations in Treatment of Acute Leukemia*[2]

| Type of Agent | Specific Agent | Result and Investigating Group |
|---|---|---|
| Pyrimidine antagonist | 5-fluorouracil (5-FU) | Ineffective (Group B) |
| (fluorinated) | 5-fluoro-2′-deoxyuridine (5-FUDR) | In progress (Group A) |
| Alkylating (inactive *in vitro*) | Cyclophosphamide (Cytoxan) | In progress (Southwestern) |
| Purine antagonist | Thioguanine<br>Thioguanosine | In progress (Group A) |
| Pyrimidine antagonist | 6-azauracil | Ineffective (Group B) |
| Folic acid antagonist | Dichloromethotrexate | In progress (Group B) |
| Purine antagonist + Glutamine antagonist | 6-mercaptopurine plus azaserine | No advantage (3) (Group A) |
| | 6-mercaptopurine plus DON | In progress (Group A) |
| Purine antagonist | 6-mercaptopurine (high loading dose) | Not reported (Group A) |
| Purine antagonist + Folic acid antagonist | 6-mercaptopurine plus Methotrexate (continuous vs. intermittent dose) | Longer remission and survival time with continuous therapy. (4) (Group B) |
| Steroids + Purine antagonist | ACTH followed by 6-mercaptopurine vs. hydrocortisone followed by 6-mercaptopurine | In progress (Southwestern) |

## SUPPORTIVE THERAPY AND TREATMENT OF COMPLICATIONS

It has been our policy to hospitalize children to institute antileukemic therapy. The parents are told the diagnosis in a frank but sympathetic manner and they are warned that the clinical situation may worsen considerably before improvement begins. During this period, children usually adjust rapidly to hospital routines. The parents learn to accept the diagnosis and to lend the child support for the many treatments and procedures which are necessary.

Blood transfusions are given as indicated to maintain the hemoglobin level in the vicinity of 9 to 10 Gm. per 100 cc. Severe anemias, which may be present at the time of diagnosis, are corrected slowly, preferably using packed cells. Digitalis and oxygen are given when cardiac failure is present.

Children with leukemia, in relapse, are highly susceptible to all types of infections. Chicken pox is a particularly serious and severe infection in these children. The administration of corticotropin and corticosteroids may further complicate the clinical situation by masking signs and symptoms of infection. Common pathogens include *Staphylococcus aureus*, Monilia, and various gram negative rods. Patterns of infection are variable. Septicemia develops frequently from local infections of the nose and the mouth and of the anorectal region. Pseudomonas infections are often manifest by septicemia with multiple, soft-tissue abscesses. The choice of antibiotics is determined by sensitivity tests. Treatment should be prompt and prolonged with a generous dosage. Prophylatic antibiotic therapy is not recommended.

Local infiltrations may occur in sites where they produce marked symptoms requiring additional therapy. Leukemic infiltration of the meninges may be treated successfully with either intrathecal Methotrexate or with radiation therapy. [10, 11] The recommended dose of Methotrexate is shown in table I. If patients are observed closely, intracranial involvement can be diagnosed early, before symptoms are severe. Intrathecal treatments can be given during overnight hospitalizations. Two or three treatments generally produce the desired therapeutic response; one additional treatment should be given after the spinal fluid returns to normal. Oral Methotrexate should be discontinued during the period of intrathecal therapy. Intracranial involvement also responds well to radiation therapy. A tumor dose of 500 to 1000 rads is usually given within 10 to 14 days. Epilation may occur in the higher dose range. Radiation therapy may also be used to treat local infiltrations in mediastinal nodes, bone, and kidney. Renal infiltration may be extreme before any alteration of function occurs. The kidneys often become palpable, but more frequently, the diagnosis of renal involvement is made by intravenous pyelography. Radiation therapy is usually not undertaken until the blood urea nitrogen level is in the high normal, or slightly elevated, range. Both kidneys are not irradiated simultaneously.

Hyperuricemia usually occurs when therapy is initiated but it may also develop when subsequent remissions are being induced or radiation therapy is being given to patients with massive local disease. Children with high white blood cell counts who respond to treatment with a precipitous fall in count are most likely to develop this complication. Prevention is far easier than treatment and may be accomplished by establishing and maintaining proper hydration by mouth or vein. The artificial kidney has been used successfully in treating patients with hyperuricemia associated with renal shutdown.[12]

## SUMMARY

At the present time there are three classes of agents available which produce remissions with some regularity in acute leukemia of childhood. Cyclophosphamide, a unique alkylating agent, has been shown capable of producing complete remissions, particularly in children who have responded well to the other classes of agents. Supportive treatment and management of complications have become well standardized. Data from institutions caring for large numbers of children with leukemia and that of co-operative study groups now show that the median survival time of the children who received treatment was from 9 to 12 months and the 10 per cent survival time, 18 to 24 months. [3, 4, 13] While curative and permanently suppressive drugs are being sought, a substantial number of children with leukemia are being well maintained clinically for a period of months. It is hoped that these children will thus be able to survive until more effective drugs become available.

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## Antique Equipment Donated to Restored Pharmacy

A rare collection of eighteenth and nineteenth century pharmacy equipment, glassware, and ceramic jars has been presented to the recently restored McDowell Apothecary in Danville, Ky., by Chas. Pfizer & Co., Inc. The 180-piece collection of antiques includes colorful glassware of period design made by early craftsmen in Scotland, England, France, and the United States. Among the older pieces are English Delft drug jars dating back to the middle of the eighteenth century, two rare green carboy-shaped stock bottles made in Scotland in about 1780, and a massive leech jar.

The apothecary's shop—honoring Dr. Ephraim McDowell, who performed the first successful oophorectomy—was restored by the Kentucky State Medical Association and the Kentucky Pharmaceutical Association.

# The Child With Physical Defects

Edward Podolsky, M.D.

THE CHILD WITH A marked physical defect is subjected to many emotional stresses and tensions. The most important emotional reaction to a deformity is that of shame and unworthiness. The victim's plight is seldom aided by the attitude of his playmates, for children, with their natural curiosity, are apt to pay undue and embarrassing attention to anything that deviates from the norm. Other children's comments on the deformity, whether these comments arise from sympathy or malice, are usually blunt. There is often a tendency to shun the deformed playmate or to force him into an inferior social position. Often nicknames referring to the deformed condition are given, and these names may cling for life.

The common defects among children are harelip, cleft palate, facial birthmarks, saddle-nose, hunchback, webbed fingers, crossed eyes, disfiguring scars, crooked teeth, and contractures resulting from burns and other causes. Some children are born with such disfigurements and others acquire them early in life. When a deformity of any degree of severity is present, it is important to have the most complete surgical restoration made at the earliest possible date. There are cases, however, where no presently known surgical techniques are of any avail, and in these cases the parent and the pediatrician must work closely to protect the child as much as possible from the psychological effects of the disfigurement. Special training programs must be devised.

Whenever possible, surgical correction of the defect should take place before the child enters school. This is the age of the greatest social reaction to deformity, and it is also the age when the child has the greatest need for conformity to the standards of his group. Every effort should be made to protect the child from the misplaced witticisms and contempt of his classmates.

The most common facial cosmetic defect is malformation of the nose, which may be too large, too bulbous, hooked, depressed with flaring nostrils, or misshapen in some other way. Depending on his emotional strength, the child with a "bad" nose may either laugh along with others, or he may withdraw from their company. But either way, he cannot escape the conviction that he is a freak or a clown. He may become shy, suffer anxieties and fears, and go to great lengths to conceal his face or avoid showing it in its most unfavorable aspect. He may develop odd mannerisms with his hands for the purpose of concealing his nose, may become tremulous, suspicious of others, forever on guard. He may actually develop a paranoia in which his nose centers. Convinced that every person he meets concentrates all his attention on his nose, the sufferer may have an uncomfortable and quite devastating feeling that he is constantly observed and privately ridiculed because of the facial blemish.

Such children, suffering from a nasal or other deformity, sometimes become limited and shy in their movements, in their flow of attention, and in their ability to react warmly to other children.

The attitude of the parent is often not beneficial. Many parents tend to "spoil" the disfigured child in some way, by responding to the child's complaints with inappropriate bursts of attention. Parents should help the deformed child to anticipate difficulties, understand how to handle them, and to develop self-reliance.

Since the child with a defect is probably destined for one or more operations entailing

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some degree of pain, he should be prepared for the ordeal by the parent. He should not be persuaded to come to the physician's office or to the hospital with the false impression that he will not suffer physical pain or discomfort. Instead, the parent should prepare him for the operation by explaining exactly what will happen, and the reasons for it.

The crucial effect that dental health may have on the emotional life of the child is not often understood. Sound, clean, white, and well-shaped teeth add much to a child's appearance, and thus to the child's pride. Deformed, painful and scaly teeth detract from the child's self-assurance, besides giving a pervasive fear of pain and discomfort. Fever may accompany toothache, and where fever is absent, there may be loss of appetite, enlarged glands, insomnia, petulance, crying, and even convulsions. Lack of attention, inability to concentrate, and lack of interest in school activities may accompany dental stress. Poorly positioned and unattractive teeth bring on all the emotional reactions accompanying other disfigurements. The pain of impacted teeth may bring about fear, anxiety, loss of attention and concentration, and a general distress that will accentuate any previously existent emotional trends.

It has been estimated that more than 10 per cent of the loss of scholastic progress is incidental to dental caries, which entail frequent absence from school, mental distraction, and the constant fear of discomfort. Toxic absorption from diseased teeth may lead to a variety of social and behavior disturbances in children, showing up in general unreasonableness, intractability, and revolt against authority. Occasionally a distinct relationship is noted between dental development and delinquency. Adequate dental care is of utmost importance in childhood, not only to preserve the teeth for later adult life but to prevent emotional disorders that may remain even after the teeth have been properly treated.

The greatest problems arise where the disfigurement has not been dealt with surgically, or where surgery is of no, or limited, avail. When the child with an uncorrected or uncorrectable deformity enters school, he fully realizes the difference between himself and others. Unless he has made an adequate psychological adjustment to his condition, he will find that he is denied the intimate friendships enjoyed by others. He will become depressed, discouraged, and lonely; and by the time he reaches adolescence, he will have a great sense of despair and a generally pessimistic view of life. With this, he will have acquired a number of peculiar personality traits, by now firmly embedded in his character.

Personality depends on two fundamental drives: one for self-expression and the other for conformance with accepted social standards. When these factors coincide, an attractive personality results. But the physically deformed child, while possessing the mental and physical faculty for self-expression, will find himself restrained by his deformity from making the personal contacts necessary for full expression.

The child may react to the situation in various ways. He may succumb to the obstacles and accept nonexpression as his lot. He may withdraw into himself, becoming secretive, shy, and unable to give expression to his instinctual impulses and drives. Underlying these behavior patterns is the ever-present feeling of fear. Secondly, the child may develop a compensatory overabundance of self-expression to satisfy his injured ego, and his means of expression may not always be socially desirable. His need to divert attention from his defect may result in overaggressiveness. Again, the underlying sense of inferiority and fear is the motivating factor. But under the most propitious circumstances, the child may succeed in replacing his suppressed modes of self-expression with alternate ones of equal or greater merit. He will find ways of expressing his skills and abilities. It need hardly be said that this last reaction is the ideal one: the difficulty is in finding ways to bring about this healthiest of emotional reactions.

The parent must be enlisted in helping the child to gain a sense of proportion toward and acceptance of his condition. Wherever possible, special training should be given, as in the speech training required by the child with a cleft palate, exercises for crossed eyes, and carefully prescribed gymnastics for the victim of bone or muscle deformities. The parents' general attitude should be cheerful, not hysterical or overprotective; the child should be assisted in adjusting his values to his condition, and to learn that real friendship can exist for him among those who will like him for his good qualities in spite of his deformity.

Generally speaking, the training of the handicapped child must be directed toward feasible modes of self-expression, and in later

life toward trades and professions in which the deformity will play little or no role. The program must follow the lines of the child's own interests and skills, and while some guidance is inevitable, the program should never be forced upon the child. In addition, the child should have constructive hobbies to occupy his spare time.

Whatever type of compensatory education is found, the child will develop along normal lines if he finds one or more satisfying modes of self-expression to keep him busy and win for him the approval and recognition of others. Such a child will be emotionally stable and free from undue tensions and conflicts. He can then lead a happy and normal life.

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## Public Apathy Bars Control of Venereal Disease

The dangers of venereal disease have dropped sharply in the last 15 years because of penicillin, other antibiotics, and improved case-finding methods. Nevertheless, the Health Information Foundation reported recently, "the very successes recently achieved threaten to lull the public into a false sense of security about the future course of these diseases." The Foundation pointed out that the rate of new cases of syphilis reported in this country is today less than one sixth what it was in 1943. New cases of gonorrhea are being reported at less than half the 1947 rate. Despite these improvements there are still large reservoirs of these diseases. Many persons with syphilis or gonorrhea are unknown to public health authorities, and often the individuals themselves do not know that they are infected. The U.S. Public Health Service estimates that 60,000 new cases of syphilis and one million of gonorrhea are still acquired each year—and many of them are not reported.

# Group Physical Education for Girls

## IMPORTANCE OF HYGIENE, UNIFORMITY, AND MORALE

Frederic Damrau, M.D., and Adeline Maneery Damrau

MANY OF OUR NATIONAL leaders have noted, and deplored, the lack of physical exercise in the lives of American children and youth. Insufficient physical activity has become an increasing menace to young people's health.[1]

In a comparison test of the physical fitness of Italian and Austrian with American school children, the six basic Kraus-Weber tests were applied to 4,458 American children and 3,000 Italian and Austrian children. The results showed American children to be inferior in physical performance at every age from 6 to 16.

We recently visited Italy, Austria, and Holland, where we attended many medical conventions and health clinics. In all three countries we were impressed by the high standards of physical education. We were also impressed by the activity and physical fitness we observed in the children and young people in those countries.

In Italy and Austria we saw many avid hikers. There are said to be more than a million bicycles in Amsterdam, and from our hotel window we saw Dutch children and youths pedaling their way to school. Dutch physicians assured us that the physical development of young people there is excellent, and we had no difficulty in believing them.

This was in marked contrast to what we noted in the activity of young people in the United States. Here, we seldom see a boy on a bicycle, seldom witness hiking parties that are common in Europe. Instead children are taken to school in buses, and in later years drive to school in their own cars. Rather than actively participate in sports, too many children are content to watch sports on television.

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### GROUP PARTICIPATION

In recent years the overemphasis on competitive sports has lessened and the directors of physical education programs in large schools have not been selected from the coaches of major interscholastic events.[2] Physicians and physical educators agree that the adulation of the outstanding athletes and the neglect of the unskilled is to be deplored.[3] All children, not merely those with special aptitudes, benefit from sports participation.

We know of one young American champion who was applauded because "he gave his all for tennis." He won a succession of important tournaments in spite of failing health, developed active pulmonary tuberculosis, and spent several years on his back at Saranac Lake, N.Y.

This attitude degrades the purpose of tennis and other sports. A desirable program of athletics for children should bring the benefits of active sports participation to the greatest possible number.[4]

### METHODS OF APPROACH

Girls and boys should be considered equally in teen-age sports programs.[5]

It has been said that for better health at the age of 70, preparation should be begun at age 7. Undoubtedly the established vogue of athletics and physical training for young girls has contributed to the remarkable increase in female longevity. The United States population census of 1950 reported that the life expectancy at birth for white females is 73 years.

Athletic activities contribute to better skeletal and muscular development. Women who have engaged in sports and physical culture

before marriage endure childbirth with shorter and more comfortable labors and far fewer complications.

Education of the parents is the most important method of approach. Too many mothers and fathers look upon physical education as more necessary for boys than for girls. Physicians and physical educators must take the lead in promoting the group participation of young girls in gymnastics and athletics.

The handling of individual cases requires diplomacy. Recently a girl of fourteen, with a very high IQ, was brought to us by her anxious mother. At five the child had had poliomyelitis, which had left the muscles of one leg paralyzed and atrophied. Although she excelled in her studies, the girl showed every evidence of neurotic frustration.

"I want to be like the other girls," she told us. "I want to play tennis."

"Tennis!" screamed her mother. "Don't you know you've had polio?"

We persuaded the mother to allow the girl to enter a tennis club. Because of her superior intelligence, she developed a fairly good tennis style, enjoyed her game, and made many friends on the courts. She was no longer frustrated. This case history suggests that handicapped girls are especially in need of the physical and psychological benefits of athletics and gymnastics.

## THE PROPER ATTIRE

Female style consciousness is lifelong, and the athletic girl has a deep psychological need to look nice. The one-piece gym suit, in a variety of attractive colors, meets most requirements. At many leading clubs the white suit is traditional for wear on the courts. The same color and design for all girls participating is usually mandatory, thus creating a feeling of group identity and eliminating dress competition. Educators agree that pride in the group, rather than an attempt to stand out above the other participants, is of psychological importance in athletics.

Gym suits should be functionally designed so that maximum freedom of action is combined with a smart appearance.

Above all, the gym suit must be freshly laundered and ironed at all times. The girl who appears in the gymnasium or athletic arena in a soiled gym suit feels inferior, and her consciousness of an untidy appearance may cause her to lose interest in the game. The best way to keep immaculate during athletic activities is to wear a gym suit only once. The "wash one, wear one" pack, twin gym suits available in a plastic bag, enables the athletic girl to meet this requirement.

It has become common practice, approved by gynecologists, for girls and women to continue athletics and gymnastics during their menstrual periods.[6] Sports can be a valuable aid in the therapy of menstrual disturbances, particularly dysmenorrhea.[7]

## IRRITATION AND CONTACT DERMATITIS

Intertrigo is a common aftermath of wearing soiled gym suits during hot weather. The most common locations are in the crotch and the folds of the buttocks. In active sport participation friction with a soiled garment may be especially severe and lead to irritation.[8] To prevent or treat chafing, personal cleanliness, fresh lingerie, and the use of a clean gym suit for every wearing are of the utmost importance.

Cotton is the best fabric for sportswear. Wool has been found to cause a common dermatitis in members of the armed forces, with eruptions the same as those of eczema and contact dermatitis.[9] Itching, hives, and erythema are noted by many women when woolen garments come in contact with the body.

Nylon interferes with the evaporation of perspiration, leaving the skin clammy, and often causes sensitization with contact dermatitis.[10] Allergic reactions to orlon and dacron with severe pruritic dermatitis have also been reported.[11]

Finally, group physical education for girls should be properly supervised with respect to sanitary protection, uniformity of attire, and the morale of group participants.

## SUMMARY

1. Due to the inactive American way of life and the coddling of juniors, the physical fitness of our children is inferior to that of Italian, Austrian, and Dutch children.

2. Physical education and athletics for large groups of girls, not the grooming of a few champions, are needed to improve the fitness of American womanhood.

3. The unique concept of "wash one, wear

one" packs has led to the development of twin gym suits of identical color, design, and size. This practice, if adopted by physical educators generally, will provide better sanitary protection, uniformity, and morale for girls engaged in group gymnastics and athletics.

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## Decrease in Death-Rate Differences By Sex and Color

Statistics on deaths in the United States during 1959 have been announced by the Public Health Service. Over the past decade, the difference in the death rate by sex in the white population has remained relatively unchanged (36 per cent higher for males than for females in 1950; 37 per cent higher in 1959). For nonwhites, however, the difference has increased: Rates for males were 26 per cent higher in 1950; 30 per cent higher in 1959.

The differences between death rates by color have become considerably smaller over the same period. Among males, a 15 per cent lower rate for the white group in 1950 decreased to a 4 per cent difference in 1959. Among females, a difference of 24 per cent in 1950 had decreased to 9 per cent in 1959.

# President's Message

Dr. Ward Darley, President of the Association of American Medical Colleges, has said of the medical manpower shortage in the United States: "The crisis we are approaching is the most serious that medical education has faced since the Flexner Report."

*Time* magazine, in a recent article that stressed the need for at least a 40 per cent increase in medical school graduates during the next decade or two, explored possible solutions to the problem. Slight hope was seen in "automation with punch cards and computer diagnoses." Some hope was seen in the junior college movement, the two year schools, and other efforts to accelerate medical education. No reference was made to the most obvious solution—opening wider the gates of our medical schools to qualified women students.

Elizabeth Blackwell first pushed those doors open, but when she graduated in 1849 from the medical college in Geneva, N.Y., her alma mater immediately voted to admit no more women. In the intervening century the doors have remained ajar, but only ajar.

For many years, the ratio of women to men among medical school graduates has remained steady at about one in twenty. During World War II, the ratio rose briefly to one in 10, but the gain was not held.

It is, of course, natural to ask not merely how many women succeed in entering medical school, but also how well they do after they are admitted. Last year, 12 women students led their medical school graduating classes. This is three times as good a record as might have been expected from the enrollment ratios. Furthermore, a larger proportion of women than men medical students appeared in the top 10 per cent of graduating classes. Incidentally, almost half of all women medical students were married, and of this group about one third had children.

The excellent academic record of women medical students is most pertinent, because the medical manpower problem is one of quality as well as quantity. A decade ago, 40 per cent of applicants for medical schools were straight A students; this figure has now dropped to 16 per cent. A decade ago, 3.5 students applied for each student accepted by a medical school; this ratio has now been cut in half. The diminishing academic quality is further reflected by increasing drop-outs; it is reported that in New England medical schools alone there are now 40 vacancies in third year classes.

In several countries, the ratio of women physicians is higher than in the United States. The most dramatic contrast is between the United States and Russia, where fully 75 per cent of all physicians are women. Presumably, this reliance upon women has contributed to the overall proportion of physicians in the population, now reported as being 164 per 100,000 in Russia, as opposed to 140 in the United States.

*(Continued on following page)*

American medical manpower would have declined still further had it not been for the influx of foreign physicians in the postwar years. One quarter of all residents and interns in the United States are aliens. The future availability of this source of supply is open to question.

Many of the old arguments against women in medicine have been disproved by experience. Nine out of 10 women medical school graduates remain in the profession, the same ratio as with men graduates; family responsibilities do not interrupt their careers to the extent that has been claimed. The cost of training women in medicine has been justified by their record of service.

While the physician manpower shortage is creating universal concern in this country, the supply of professional nurses has increased and is expected to continue increasing at a gratifying rate. The proportion of nurses has been raised by over 50 per cent in the last 30 years; the proportion of physicians has remained almost unchanged.

The simple fact is that girls with medical leanings are encouraged from high school age on, to enter nursing rather than medicine. The growing number of nurses who complete postgraduate training and the steady increase in the collegiate component of all nurses' training suggest that there is a significant reservoir of potential women physicians who have been diverted to nursing in this country.

The skyrocketing cost of medical education and the tremendous problem of building, staffing, and endowing needed new medical schools have been put forward as the basic impediments to solution of the American medical manpower crisis. But the attraction of other professions and the lure of business careers will continue to accentuate the qualitative problem, so clearly indicated by the number and type of male applicants now seeking admission to our medical schools. More money and more buildings will not reverse this trend.

Opening the doors wider to women *can* reverse this trend. During World War II, we doubled the proportion of women in our medical schools. This should be our minimum goal for the 1960's. (Guest Editorial, in *Massachusetts Physician*, *19*:124-126 *(passim)*, Jan., 1961.)

Claire F. Ryder M.D. M.P.H.

# Visiting the Home of an Elizabethan Physician

Beatrice Levin

LINKED CLOSELY WITH the Shakespearean properties in Stratford upon Avon is Hall's Croft, just a few minutes' walk from Shakespeare's birthplace. Here Dr. John Hall is said to have carried on an extensive practice that included attendance on royalty as well as medical care for his friends and neighbors.

In 1607 Shakespeare's daughter, Susanna, was married (very happily) to the Stratford physician, John Hall. Shakespeare spent many a long evening before the hearth discussing medical knowledge with his son-in-law in the handsome, half-timbered house with its lovely walled garden. His plays of this period reveal newly added references to the role of the physician. When Lady Macbeth's maid is reluctant to tell the doctor about the Queen's sleepwalking, the doctor admonishes: "You may to me, and 'tis most meet you should."

Dr. Hall's dispensary, a long narrow apartment at the end of the parlor, is lit by small windows looking out on lovely formal gardens. The dispensary is furnished in the style of an Elizabethan consulting room, complete with apothecaries' jars for medicines, white, lettered in blue. The jars contained pills, herbs, herbals, and mortars and pestles. On the walls are drawings of the old instruments of the period. They have not changed much; one easily recognizes the forceps, the scalpels, and the daily tools of the Elizabethan physician.

Dr. Hall's casebook lies open, and one reads of "A child of Mr. Walkers of Ilmington, minister, aged six months, afflicted with the falling-sickness, by consent thus freed. First, I caused pieces of piony root to be hanged about the neck; when the fit afflicted I commanded to be applied with a sponge to the nostrils the juice of rue mixed with white wine vinegar . . . the hair was powdered with the powder of the roots of piony . . . Thus the child was delivered from all its fits . . . .

"Mrs. Kempson being for many days and nights cruelly tormented with a hollow tooth, and had used many medicines, as also charms, and yet not profited, came running to me, to who I prescribed the following water: water of corn poppy two ounces; oil of vitriol so much as made it sharp being well mixed. There was dipped in it lint and applied . . . .

"Elizabeth Hall, my only daughter, was vexed with *tortura oris* [*sic*] or the convulsion of the mouth . . . . In the beginning of April she went to London and . . . took cold . . . . The neck was fomented with aqua vitae, in which was infused nutmegs, cinnamon, cloves, pepper. She ate . . . nutmegs often . . . .

"Dr. Drayton, an excellent poet, labouring of a tertian, was cured by the following: the emetic infusion one ounce, syrup of violets a spoonful . . . ."

At the back of the hall, the physician's kitchen is furnished with kitchen utensils, fireplace andirons, and furniture, which give an excellent picture of the cooking and eating arrangements of his time.

Unlike many Tudor homes in Stratford, Hall's Croft has a spacious entrance with a floor of blue-grey stone flags. The aged, darkened beams of the walls and ceilings and a seventeenth century fireback and extended grate stand together as a beautiful background for the fine pieces of Tudor and Jacobean furniture.

Little has been written about Dr. John Hall, although he was one of the best-known figures in seventeenth century Stratford. He was the son of a Bedfordshire doctor and he stud-

*Mrs. Levin, of Tulsa, Okla., studied at the Shakespeare Institute in Stratford upon Avon, England, during the summer of 1959.*

ied as Queens' College, Cambridge, and took his degree of Master of Arts in 1597. He studied abroad and about 1600 settled in Stratford upon Avon and established his practice.

Since Warwick Castle is not far from Stratford, Dr. Hall may have treated and cared for the noble Warwicks. He is known to have had a large, fashionable medical practice not only in town but in the neighboring counties. A man of character and originality, he was admired by his colleagues.

At the head of the Jacobean staircase of striking design is a small landing, from which you may see one of the original windows of the house (now unglazed but complete with mullions). A small bookshop has been set up on the landing where, for one shilling, you may buy a pamphlet about the "Home of Susanna Shakespeare" by Levi Fox, director of Shakespeare's Birthplace Trust. In it, Fox has written: "Judged by modern standards, Dr. Hall's remedies are crude and of no value; but there is ample evidence to show the high esteem in which he was held by his patients, both rich and poor."

Another book that attracted my attention at the Hall's Croft display was "Delightes for Ladies," one of the earliest cookery and household recipe books, "To adorne their Persons Tables Closets and Distillatories, by Sir Hugh Plat, Reprinted from the original text of 1609." An Elizabethan medical authority, Dr. Anthony Boorde, is quoted, "Two meales a day is sufficient for a resting man; and a labourer may eate three times a daye; and he that doth eate often, lyveth a beestly lyfe."

The book explains: "The medicine chest (of Elizabethans) had to be well provided, and it was as a textbook of the methods of making the potions . . . that 'Delightes for Ladies' was written."

> Good huswives provide, ere an' sickness do come,
> Of sundry good things, in her house to have some. . . .

Dr. Boorde believed that water "is not wholesome, sole by itself, for an Englysshe man," and so vast quantities of beer were brewed and cider was common, while the "receipt" books suggested all kinds of drinks made from cultivated and wild fruit. Even today in England, if you want water served with your meals you must ask for it, and it comes lukewarm from the tap, if you get it at all.

*Mrs. Levin*: May I have some water?

*Waitress*: We have ale, lager, and beer.

*Mrs. Levin*: Well, may I have some water?

*Waitress*: We have mineral water, wine, spirits.

*Mrs. Levin*: I would like a glass of water.

In due course the glass of warm liquid appeared. It was about 80 F outside.

*Mrs. Levin*: I don't suppose I could have some ice in it?

*Waitress*: Oh, no, Madame, it would only melt. It's such a hot day.

Hall's Croft, Stratford upon Avon, England.

# *Arigato**

On page 777 of the August 1960 issue the JOURNAL OF THE AMERICAN MEDICAL WOMEN'S ASSOCIATION published a request for medical books for the Kansai Medical School, Moriguchi, Osaka, Japan. Physicians reviewing books for THE JOURNAL and readers of THE JOURNAL responded to this appeal. At Christmastime we received the following letter:

> We have recently received the medical books you donated to our school. We wish to express our great appreciation for the kindness and friendship which you extended to us through Prof. Ohara's good offices.
>
> Because of your generosity, our school library has been much repleted and is now well enough provided to establish a graduate school.
>
> We shall long remember the kind gift of these precious books.
>
> If at any time we can be of service to you in our country, please, do not hesitate to call upon us.
>
> Faithfully yours,
> (Signed) Kikau Ogiu
> President of Kansai Medical School
> (Signed) Tadaki Matsumura
> Chief Librarian of Kansai Medical School
> (Signed) Kazue Ohara

Kansai Medical School. *Front Row, Left to Right*: Miss T. Okada, Librarian; Dr. T. Matsumura, Chief Librarian; Dr. K. Ogiu, President; Dr. K. Ohara, Professor of Dermatology; Dr. M. Morita, Professor of Pharmacology; Dr. E. Inoue, Head of Central Laboratory, and Mr. Z. Kido, Librarian.

*"Thank you," in Japanese.

# Of Special Interest

## HONOR BIOCHEMIST AT RETIREMENT

Sister Hilary Ross, a biochemist known internationally for her laboratory research on leprosy, was honored by Leroy E. Burney, Surgeon General of the U.S. Public Health Service, on the occasion of her retirement after 37 years of duty at the national leprosarium at Carville, La. A certificate was preented to Sister Hilary, citing her for outstanding contribution to the care and welfare of patients with leprosy and for dedicated effort in developing and communicating new knowledge on this disease.

Also competent in photography, Sister Hilary's accumulated photographic records are used in evaluating progress in the treatment of leprosy. An exhibit of her clinical photographs showing the results of sulfone therapy in leprosy won a silver medal for the Carville hospital at the 1957 Convention of the AMA.

Sister Hilary, a member of the Daughters of Charity of St. Vincent de Paul, is now in Japan organizing ancillary medical services in a hospital now under construction for crippled children.

## LONG WAITING LIST FOR "HOPE" SERVICE

HOPE I, the first American hospital ship of a proposed group of three, has a waiting list of more than 200 volunteers in the medical and allied professions, it was announced recently by Dr. William B. Walsh, President of Project HOPE. He noted the technical skill, maturity, and command of languages of the volunteers, and added, "We know they are compassionate and aware of the problems of the world, because they are giving up established practices and the comforts of the highest standards of living on earth. These are our magnificent Americans, and they will serve as our best examples of the opportunities of our way of life."

Now in Indonesia at the invitation of that country, the HOPE ship has "scored a point for our side in the cold war," according to Dr. Walsh. Noting that even Premier Khrushchev of Russia was aware of the positive influence of HOPE, he said that the Premier "found that he had to do something too, so he promised to build a hospital for the Indonesians."

The first team of ten medical volunteers is already aboard the HOPE I, supplementing the regular medical crew. The second team left recently to join the ship. HOPE II for Africa and HOPE III for South America will be ready in another year, if public support permits.

## CHRONIC CONDITIONS LIMIT ACTIVITY

About one out of every ten Americans must limit his normal activities due to a chronic condition, it was reported recently by the U.S. Public Health Service.

A comparison of figures on the basis of family income shows that where there is less money (under $2,000 a year) there is proportionately three times as much activity limitation as in families with over $7,000 a year. The rates were, respectively, one of five persons and one of fifteen persons.

No significant differences in limitations of activity and mobility were noted among residents of urban, farming, and rural nonfarming areas.

The list of chronic conditions used in the National Health Survey interviews included asthma, tuberculosis, rheumatic fever, heart disease, hemorrhoids, ulcers, diabetes, epilepsy or convulsions, spinal disease, cancer, and 14 other conditions.

## GOVERNMENT AID FOR MEDICAL CARE

More than half the adult population favor government help in obtaining low-cost medical and hospital care, and about one in three believes that present government activity in this area should be increased, according to recent studies of public attitudes on these subjects.

High income, high occupational status, and lengthy formal education are all associated with opposition to government participation in low-cost hospital and medical care. Republicans are more likely than Democrats to oppose government aid, but even among the for-

mer, more people support the idea of government assistance than oppose it.

As the authors of the study noted, "There is a tendency for political 'conservatism' to increase with age"; yet "older persons who might otherwise favor a smaller role for government in general make an important exception to this principle when it comes to financing medical care costs."

A free copy of the report of the studies, both conducted by the University of Michigan, may be obtained from the Subcommittee on Income Maintenance and Social Security of the Co-ordinating Committee on Social Welfare Research, Frieze Bldg., Ann Arbor.

## STATE FRANCHISE FOR HOSPITALS

State franchising of hospitals, such as is done for banks, may be one answer to the problem of increasing hospital costs and use, as was suggested by Mr. Ray E. Brown, Superintendent of the University of Chicago Clinics and former President of the American Hospital Association. Greater use of the hospital regional planning mechanisms in the Hill-Burton Hospital Survey and Construction Act of 1946 was mentioned as another solution by Mr. Walter J. Rome, Executive Director of Children's Hospital, Pittsburgh.

The two authors, writing in the *Journal of the American Hospital Association*, indicated that part of the reason for the increasing cost of hospital care is that many hospitals are too small to function efficiently or are located in areas where they do not receive maximum usage.

Regional planning and pooling of hospital resources would overcome some of the problems, if necessary leverage for enforcement were provided. This could be accomplished through a system of state franchising boards, which would permit construction or expansion of hospitals only in areas where they would receive maximum and most efficient use.

Since the idea of "governmental control in any form is repugnant to all of us who are dedicated to the voluntary way of life and our voluntary system of hospitals," Mr. Brown said, the franchising system offers the best means of solving the problem of hospital distribution and utilization, while doing the "least damage" to the values of the voluntary system.

Mr. Rome, President of the Hospital Association of Pennsylvania, pointed out what the Hill-Burton Act has already accomplished: hundreds of construction or expansion projects started or completed; a statistical system set up for measuring bed needs; advancements made in hospital design; research in hospital administration stimulated. He contrasted this with the failure to implement the concept of a co-ordinated voluntary hospital system on a regional basis. Since hospitals have recently had experience in working together through hospital councils, this concept should be expanded into citizen-run regional planning groups, supervised by state Hill-Burton agencies and financed under the Act, Mr. Rome said.

## NORWEGIAN WOMEN IN PUBLIC HEALTH

In Norway, due to the radical decrease in the incidence of tuberculosis, the number of sanatoriums operated by the Norwegian Women's Public Health Association recently was reduced from 40 to 5. Until then the Association's main work for 60 years had been fighting tuberculosis; now its attention is being concentrated on other problems—cancer, rheumatism, and cerebral palsy in children. The Association holds mass examinations to detect early cancer, operates two hospitals for rheumatic patients, one rheumatism institute and two physical therapy clinics, and has five nursing homes for palsied children. Other institutes are "sick hotels" for modified outpatient care, maternal and child health centers, and nursing homes for persons suffering from senile dementia.

## CHILDREN'S BOOKS ABOUT ILLNESS

"Michael Gets the Measles," "Peter Gets the Chickenpox," and "Dear Little Mumps Child," all with illustrations and verses, are the literary products of a physician mother, Dr. Marguerite Rush Lerner. A typical verse humorously compares measles rash with chickenpox, to the detriment of the latter, which is described as "scratchy-scritchy." The books are published by Medical Books for Children, Minneapolis.

Dr. Lerner and her husband, Dr. Aaron B. Lerner, both professors at Yale University School of Medicine, have four young sons.

# Opportunities for Women in Medicine

## AWARDS

*Essay on Psychoanalysis.* The Association for the Advancement of Psychoanalysis has announced the annual Karen Horney award, a prize of $150 for a paper deemed to have contributed significantly to the furtherance of psychoanalysis. Entries should be forwarded to Louis E. DeRosis, M.D., Chairman, Karen Horney Award Committee, 815 Park Ave., New York 21, N.Y., no later than Oct. 31, 1961.

## CAMP PHYSICIAN

Established Vermont girls' camp, July and August, or either—$900 for full season. Write Herbert Brill, 50 Broadway, New York City 4.

## MEETINGS

*Goiter.* The American Goiter Association, Inc., will hold its next meeting May 3-6 in Philadelphia. For information Dr. John C. McClintock, Secretary, may be contacted at 702 Madison Ave., Albany 8, N.Y.

*Gynecology.* The next meeting of the American Gynecological Society is scheduled to be held in Colorado Springs, Colo., May 29-31. Information may be obtained from the president of the Society, Dr. Albert H. Aldridge, 899 Park Ave., New York 21, N.Y.

*History of Medicine.* The American Association for the History of Medicine will meet in Chicago, May 18-20. Information is available by contacting Dr. John B. Blake, Secretary-Treasurer, c/o Smithsonian Institution, Washington 25, D.C.

*Orthopsychiatry.* The thirty-eighth annual meeting of the American Orthopsychiatric Association will be held at the Hotel Statler-Hilton, New York City, March 22-25. Approximately 5,000 persons, representing the fields of psychiatry, psychology, psychiatric social work, education, and nursing, plus interested laymen, are expected to attend. For details of the meeting write Marion F. Langher, Ph.D., American Orthopsychiatric Association, 1790 Broadway, New York City, 19.

*Pediatrics.* The American Pediatric Society plans to meet in Atlantic City, May 2-3. Information may be obtained from Secretary Conrad M. Riley, Denver General Hospital, Denver 4.

*Physicians.* The American College of Physicians will next meet May 8-12 in Miami Beach, Fla. For information the executive director, Dr. Edward C. Rosenow, Jr., may be contacted at 4200 Pine St., Philadelphia 4.

*Sterility.* The American Society for the Study of Sterility will meet in Miami Beach, Fla., April 21-23. Information may be obtained from Dr. Herbert H. Thomas, 920 S. 19th St., Birmingham 5, Ala.

## SCHOLARSHIPS

*Medicine.* The National Foundation is offering health scholarships in medicine to college undergraduates accepted by an AMA-approved school for admission in the fall of 1961. Students already possessing baccalaureate degrees and those already enrolled in medical school are not eligible. The scholarships may be used for any educational expense. Scholarships are also being given to selected college sophomores interested in studying medical social work. Further information and application forms for both types of scholarship may be obtained from The National Foundation Health Scholarships, 800 Second Ave., New York City 17, or from any local National Foundation chapter or from the dean or scholarship official of the student's college. Completed application forms and all other required credentials must be mailed to The National Foundation Health Scholarships office by April 1.

# News of Women in Medicine

Among the women physicians speaking at the thirty-third scientific sessions of the American Heart Association meeting in St. Louis in October were the following: VICTORIA A. BRADESS, Valhalla, N.Y.; C. JOAN COGGIN, Los Angeles, Calif.; HARRIET P. DUSTAN, Cleveland, Ohio; JUNE M. FISHER, Iowa City, Ia.; ANNA J. HAUCK, Boston, Mass.; BARBARA S. HELMSTETTER and ELOISE E. JOHNSON, Chicago; DERA KINSEY, Boston; GRACE M. ROTH, Albuquerque, N.M.; and CAROLINE B. THOMAS, Baltimore, Md.

SISTER MARY LIGOURI CANTLIN, M.D., of the class of 1950 of Women's Medical College of Pennsylvania, is the first nun of her order—the Sisters of Mercy—to be certified by the American Board of Surgery.

DR. HELEN DORSEY, of Hampton, Va., is now serving as president of the Hampton Medical Society.

DR. THELMA DUNN of Washington, D.C., has been elected vice-president and president-elect of the American Association for Cancer Research.

DR. ALICE L. GARRETT reported findings observed in a series of 79 spinal fusions at the Rancho Los Amigos Hospital in Hondo, Calif., to the Academy of Orthopedic Surgeons in Chicago. Among the favorable results reported by Dr. Garrett and her associates, DR. JACQUELINE PERRY and Dr. Vernon L. Nickel, were the following: improved respiratory function and upper- and lower-extremity activity, reduced fatigability, greater endurance, and decrease in respiratory infections.

DR. RUTH GRAHAM of Roswell Park Memorial Institute, Buffalo, N.Y., speaking to the Inter-Society Cytology Council of Chicago, reported on the use of the vaginal smear in predicting survival of cervical cancer patients receiving radiation therapy. She said that such smears have aided recognition of post-radiation recurrence of cancer before clinical symptoms are evident.

DR. HELEN M. GRAY was recently appointed to the faculty of the University of Louisville School of Medicine as an associate in Child Health and assistant professor of Psychology.

DR. PORTIA G. HOLMAN of the Elizabeth G. Anderson Hospital, London, reported on patterns of enuresis to the first European Congress on Orthopsychiatry.

The story of DR. HARRIET JOHN was told recently by her great-great grandson, Dr. C. Howard Ross, of Ann Arbor, Mich. Born before the end of the eighteenth century, she read medicine for two years, served as a medical apprentice for two more, and in 1813 was granted a medical license by the State of Ohio—itself barely a decade old.

The first surgical text written in America was in her library. Its author was John Jones, its date prerevolutionary. Dr. John practiced in an era before the stethoscope and anesthesia were known in this country, and for many years before Elizabeth Blackwell received her history-making M.D. degree from Geneva Medical College in 1849.

As an old woman she took her granddaughter with her on rounds, and the latter passed her reminiscences on to her grandson.

DR. MARGARET ANN LIVINGOOD is the new assistant medical director of the Frontier Nursing Service in Wendover, Ky.

DR. EUGENIA SACERDOTE DE LUSTIG of Argentina reported her findings of experiments with chick embryos to the first Latin American Conference on the Early Diagnosis of Cancer, held earlier this year in Bogota, Columbia. Also addressing the conference was DR. GRACIELLA LEYTON DE CROVETTO of Chile. She spoke on differentiation of proteoses.

DR. DORIS ROME was one of three physicians reporting to the thirty-fifth Anniversary Congress of the Pan American Medical Association on a direct relationship between incidence of abortion and percentage of clustered eosinophilic, karyopyknotic superficial cells seen in vaginal smears taken during pregnancy.

DR. HELEN M. H. RYAN of Philadelphia has been elected to the presidency of the Pennsylvania Physicians' Art Association for 1960-1961. DR. ALMA DEA MORANI, also of Philadelphia, is serving on the Board of Directors as first vice-president. Dr. Morani was among

the first and third place winners in the recent annual exhibition of the Pennsylvania Physicians' Art Association. Dr. Frances M. Triboletti of Chester, Pa., earned second place and honorable mention awards.

Dr. Claire F. Ryder, President of the AMWA, presented a paper, "Today's Challenge—An Aging Population," at the 1960 annual meeting of the American Dietetic Association.

Dr. Selma E. Snyderman, Associate Professor of Pediatrics at the University Hospital, New York University Medical Center, New York City, is one of four investigators to be working under a $234,383 grant awarded by the John A. Hartford Foundation for the study of the causes of eczema in infants.

Dr. Anna L. Southam, obstetrician at the Columbia-Presbyterian Medical Center in New York City, presented a paper on the management of dysfunctional uterine bleeding in adolescence at a recent meeting of the Columbia-Presbyterian Medical Society. An interview based on Dr. Southam's study is being published in a Roche Report.

Dr. Herta Spencer of New York City spoke on "Radiostrontium Metabolism in Man" at the 1960 annual meeting of the American Dietetic Association. Dr. Spencer is in charge of research in neoplastic diseases at the Montefiore Hospital in New York.

Dr. Dorothy A. Starr has been appointed chief of the Adult Mental Health Division, Bureau of Mental Health of the District of Columbia.

Dr. Kathryn L. Stephenson, a plastic surgeon in Santa Barbara, addressed the California Society of Plastic Surgeons in May, 1960.

Dr. Sophie Trent of Meriden, Conn., was commissioned Lieutenant Colonel in the Medical Corps of the U. S. Army Reserves, the only woman to hold that rank in Connecticut.

Dr. Jo Anne Whitaker of the Texas Southwestern Medical School reported to the American Pediatric Society meeting on a technique using fluorescent-antibodies to detect pertussis organisms. The meeting was held in Swampscott, Mass.

## Branch News

Branch Two, Chicago, Illinois, is sponsoring a contest for original research papers by residents, interns, and senior medical students in the Chicago area. Both men and women are eligible for the cash prizes of $100 and $50. The winner will be announced at the April 12, 1961 meeting commemorating the ninety-fifth anniversary of the founding of the Mary Thompson Hospital.

## ERRATUM

On page 1173 of the December, 1960, issue of The Journal, Fig. 3 *Right* is before roentgen-ray therapy and Fig. 3 *Left* is after therapy.

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- induces natural elimination
- promotes regularity
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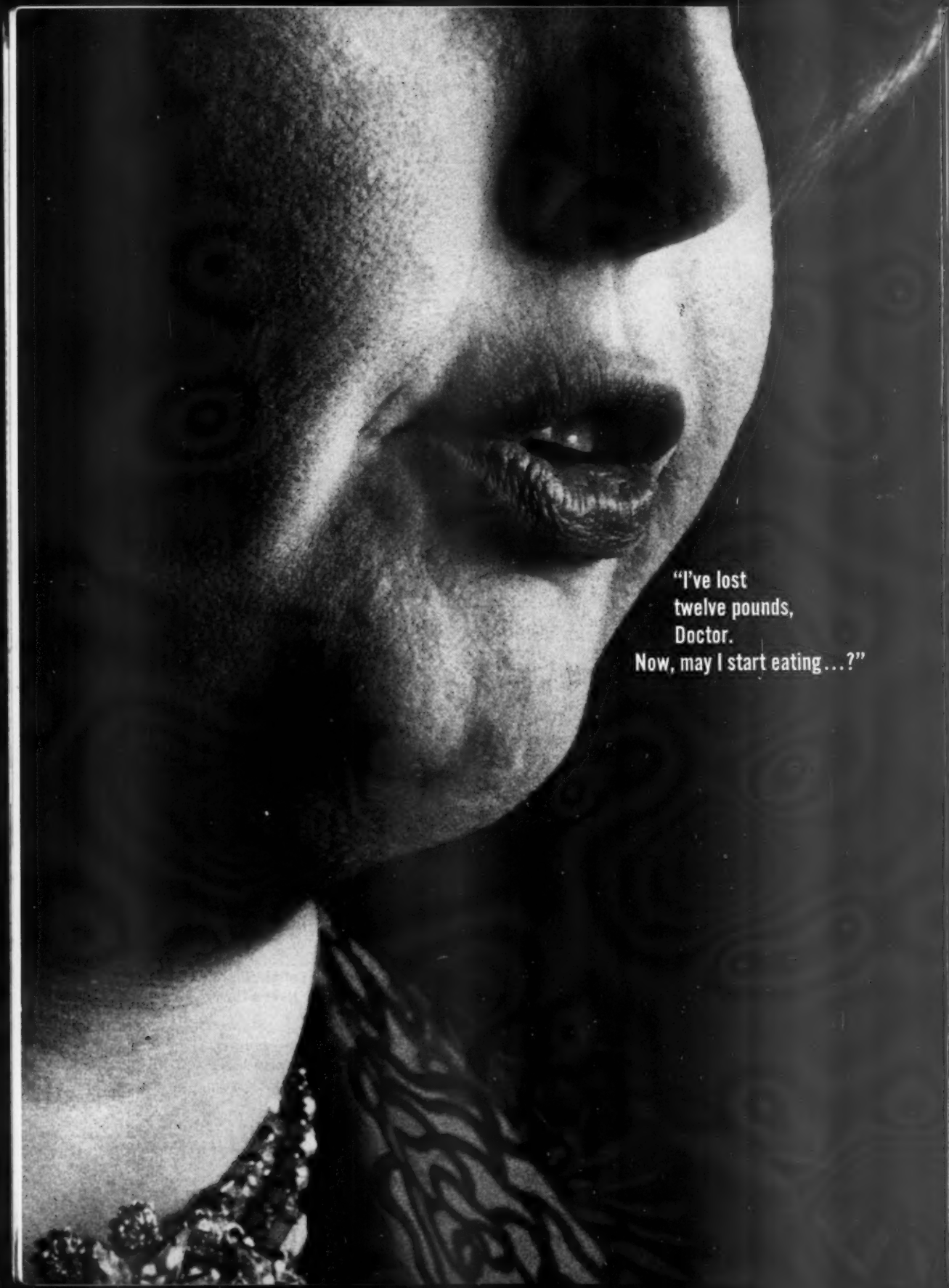
"I've lost
twelve pounds,
Doctor.
Now, may I start eating...?"

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(Continued from Page 124)

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*Membership Chairman:* Pearl Zink, M.D., 615 Medical Arts Bldg., San Antonio.

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*President:* Johanna Dieckman, M.D., 868 Second Ave., Salt Lake City.

**FORTY-SEVEN, COLORADO**
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*Secretary:* Maryethel Meyer, M.D., 1677 Wadsworth Ave., Lakewood.

*(Continued on Page 164)*

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## AMERICAN MEDICAL WOMEN'S ASSOCIATION, INC.

### APPLICATION FOR MEMBERSHIP

Name ..... Date .....
(Please print as it should appear in the directory.)
Address (Present) .....
Address (Permanent) .....
(Please check address to which THE JOURNAL and AMWA correspondence are to be mailed.)
Medical School .....Year of Graduation .....
Licensed in County .....State .....
Specialty .....Certification by American Board of.....Year.....
Date and Place of Birth .....
Medical Society Affiliations .....
.....
.....
Hospital and Faculty Appointments .....
.....
Public Health, Government, or Industrial Appointments .....
.....
.....

Check membership desired:

☐ Life-Dues $200 (May be paid in two installments in two consecutive years)
☐ Active-Dues $10 per annum (Branch dues not included in active membership dues and are payable to branch treasurer)
☐ Associate-No dues ☐ Junior-No dues ☐ Affiliate-Dues $5 per annum

# American Medical Women's Association, Inc.

## BRANCH OFFICERS, 1960-1961

(Continued from Page 163)

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*Secretary:* Yurn Ock Dunn, M.D., 1221 15th Ave., Anchorage.

**Please report all changes in Branch officers and chairmen as soon as possible to American Medical Women's Association, 1790 Broadway, New York 19, N.Y.**

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**CONSTITUTION OF THE AMERICAN MEDICAL WOMEN'S ASSOCIATION, INC.**

Article I, Section 3A. A woman is eligible for **Active Membership** if she holds the degree of Doctor of Medicine from an accredited medical school, who is a citizen and resident of the United States, and who is in good professional standing.

Article I, Section 5. A woman is eligible for **Associate Membership** if she is an intern, resident-in-training, fellow, or physician in the first year of practice. She does not pay dues.

Article I, Section 6. A woman is eligible for **Junior Membership** if she is a student at an accredited medical school in the United States. She does not pay dues.

Article I, Section 7. A woman may be granted **Affiliate Membership** by the Executive Board if she meets all the requirements for active membership except that of U.S. citizenship and residency.

All members receive the official publication, the JOURNAL OF THE AMERICAN MEDICAL WOMEN'S ASSOCIATION. Life and Active members receive membership in the Medical Women's International Association.

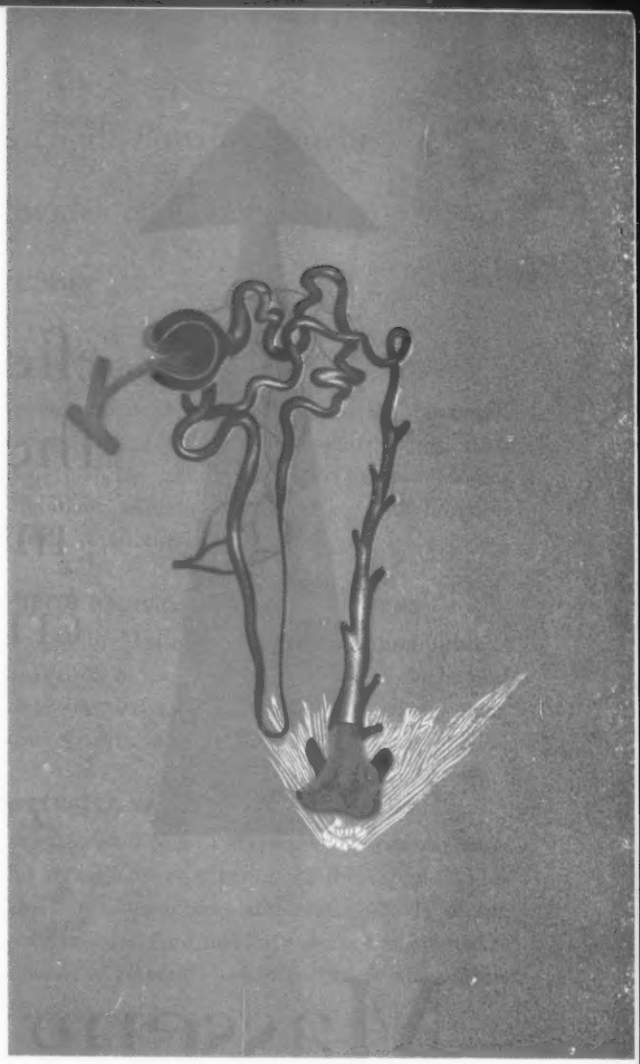
Signature.....

Endorsers are required only if applicant is NOT a member of a State or County medical society. Endorsers must be members of American Medical Women's Association.

Endorser: 1. ..... Address.....

2. ..... Address.....

Checks payable to the American Medical Women's Association, Inc. must accompany application. Mail to Treasurer, AMWA, 1790 Broadway, Room 315, New York 19, N.Y., or to the Branch Treasurer.



## *on the pathogenesis of pyelonephritis:*

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References: 1. Schreiner, G. E.: A.M.A. Arch. Int. M. **102**:32, 1958. 2. Freedman, L. R., and Beeson, P. B.: Yale J. Biol. & Med. **30**:406, 1958. 3. Rocha, H., et al.: Yale J. Biol. & Med. **30**:341, 1958.

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The normal pH of the vagina (3—4.5) inhibits the growth of most pathogens, but several factors such as menstruation and vaginal infections may cause the vaginal pH to rise . . . thus promoting greater growth of pathogens.

A simple acid douche will restore normal vaginal pH, but it is quickly neutralized by the alkaline mucosa and pH rises again. An effective therapeutic agent must be *buffered* to maintain the pH for several hours and must also be able to *penetrate* the folds of the vaginal mucosa for effective cleansing.

**FORMULA:** Ammonium Alum, Boric Acid, Phenol, Eucalyptol, Berberine, Menthol, Thymol and Methyl Salicylate.

# A Massengill Powder douche provides effective therapy because it:

**1 RESISTS NEUTRALIZING**

The *buffered* acid douche solution of Massengill Powder (pH 3.5-4.5) resists neutralizing. And this normal, low pH is maintained for 4 to 6 hours in ambulant patients . . . and as long as 24 hours in recumbent patients.

**2 INHIBITS PROPAGATION OF PATHOGENS**

Low pH of Massengill Powder solution inhibits propagation of monilia, trichomonas vaginalis and pathogenic bacteria while simultaneously promoting growth of beneficial Döderlein bacilli.

**3 PENETRATES VAGINAL MUCOSAL FOLDS**

Low surface tension of Massengill Powder solution is 50 dynes/cm. (vinegar is 72 dynes/cm.). This enables it to penetrate and cleanse folds of the vaginal mucosa. And this low surface tension makes cell walls of infecting organisms more susceptible to therapy.

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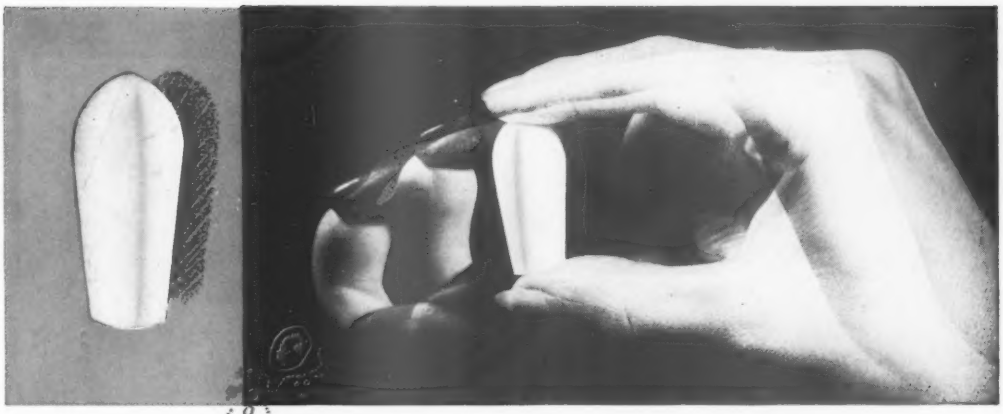

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- INSURES CORRECT SUPPOSITORY PLACEMENT

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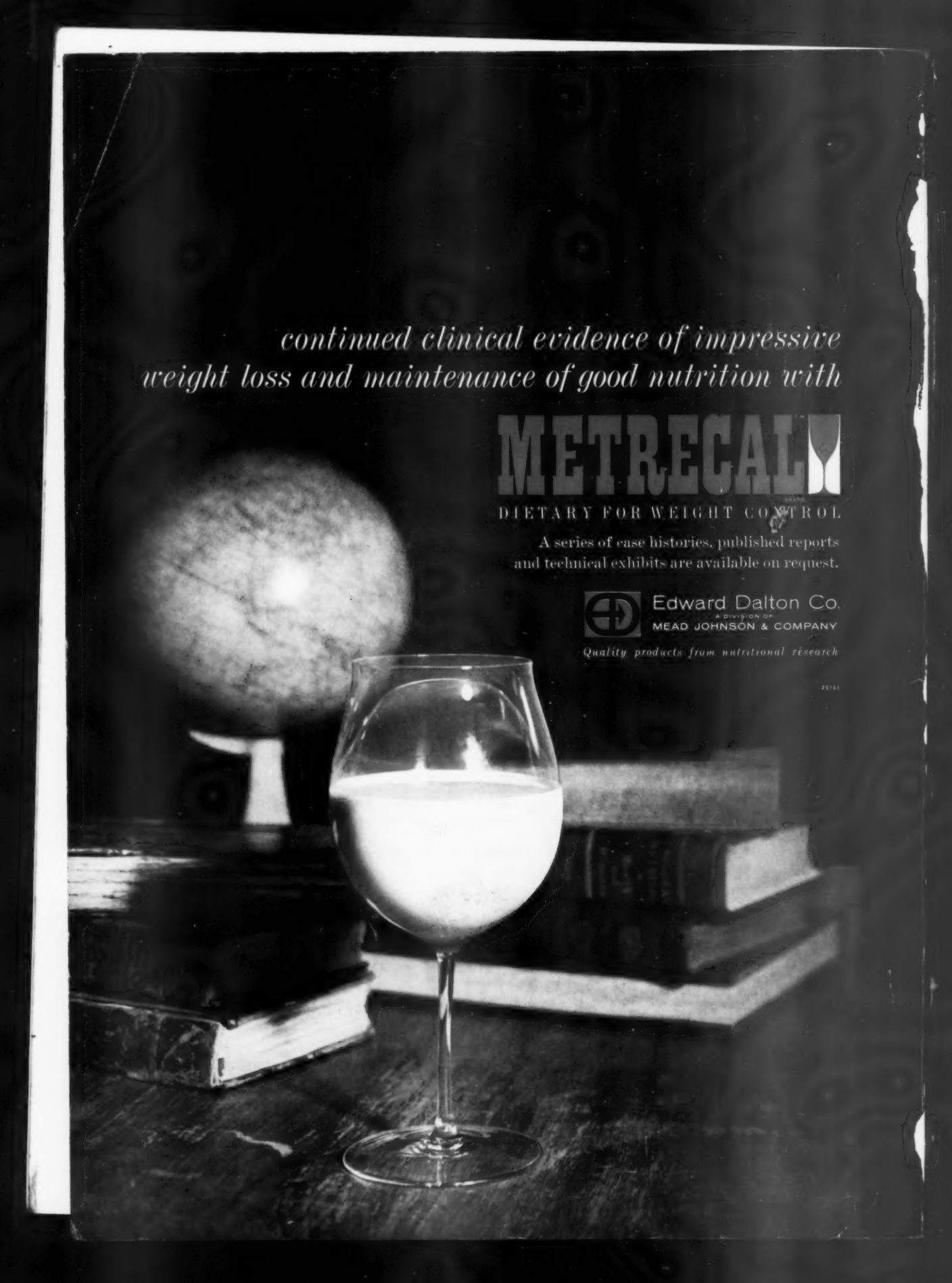
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